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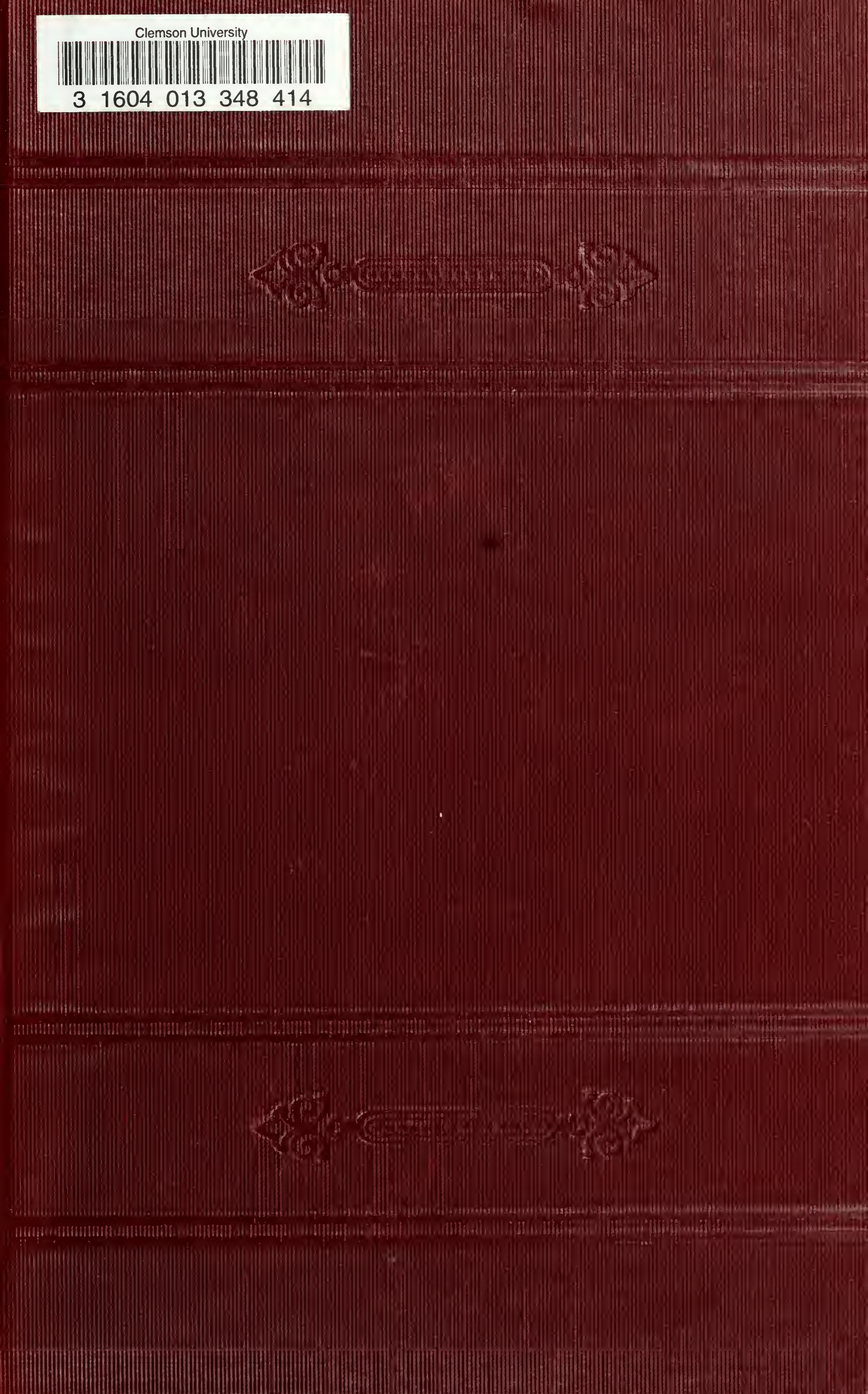

ANNUAL REPORT

OF THE

SURGEON GENERAL OF THE PUBLIC HEALTH SERVICE OF THE UNITED STATES

FOR THE FISCAL YEAR

1927

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LETTER OF TRANSMITTAL

Treasury Department,
Office of the Secretary,
Washington, December 5, 1927.

Sir: In accordance with section 9 of the act of Congress approved July 1, 1902, I have the honor to transmit herewith the report of the Surgeon General of the Public Health Service for the fiscal year 1927.

Respectfully,

A. W. Mellon,
Secretary.

The Speaker of the House of Representatives.

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ANNUAL REPORT OF THE SURGEON GENERAL OF THE PUBLIC HEALTH SERVICE

TREASURY DEPARTMENT,
BUREAU OF THE PUBLIC HEALTH SERVICE,
Washington, October 15, 1927.

SIR: In accordance with the act approved July 1, 1902, I have the honor to submit, for transmission to Congress, the following report of the transactions of the United States Public Health Service for the fiscal year ended June 30, 1927. This is the fifty-sixth annual report of this service, covering the one hundred and twenty-ninth year of its existence.

By reason of the extensive commercial relations of the United States with countries throughout the world and their bearing on the public health, special efforts have been made to keep advised of the prevalence of diseases not only in our own country but in foreign countries.

HEALTH CONDITIONS IN FOREIGN COUNTRIES

The development of public health organization, national and international, is now such that it is practicable to keep advised currently of the prevalence of epidemic diseases and the health of populations throughout the world. This is brought about through exchanges of information with State and local health authorities of the United States, diplomatic and consular officers abroad, the Pan American Sanitary Bureau, at Washington, the International Office of Public Hygiene, at Paris, and the Health Section of the League of Nations, at Geneva. In no previous year have there been better facilities for the collection of information regarding contagious and infectious diseases and matters pertaining to the public health.

These facilities are not wholly adequate, however, for all countries, nor, indeed, for all States of the Union.

The health of the population of those parts of the world for which dependable reports are available was generally better during the fiscal year ended June 30, 1927, than for any previous year for which we have records. While epidemics occurred here and there, and preventable and fatal diseases were prevalent everywhere, to an appalling degree in some countries, the past year has witnessed no disheartening spread of infectious diseases into areas where public health administration is well established. On the contrary, notable progress has been made not only in confining diseases of this type within endemic areas, but in the dissemination of knowledge for their prevention and the mitigation of the effects of other diseases controllable by environment.

On the whole, the first half of the fiscal year 1927 was characterized by unusually low death rates in foreign countries from which reports were received. In Germany, for instance, the 1926 urban death rate reached the low level of 10.3 per thousand. It is necessary to emphasize, however, that favorable mortality rates such as these do not prevail throughout the world; no view of the world health conditions is in perspective without proper emphasis upon the mortality rates of India and Egypt, which are three times as high as ours, or upon mortality rates of certain cities and areas in Spain, Russia, and South America, which are double those prevailing in northwestern Europe, Great Britain, and the United States. In most of the countries having higher mortality rates, however, the year was signalized by unusual freedom from epidemic diseases.

The most serious condition that interfered with the attaining of even lower mortality rates was the epidemic of influenza which affected the greater part of Europe in 1925–26. Slight epidemics of this disease, following the increased prevalence in the winter of 1925–26 in the United States and elsewhere, had been reported in widely scattered places, including New Zealand, the West Indies, Mauritius, Basutoland, and South Rhodesia during June to November, 1926, in Denmark in September, and in England during November. By December, 1926, influenza was reported as epidemic in parts of France, Switzerland, and Spain, and later it affected Belgium, the Netherlands, certain parts of Germany, Norway, Sweden, Denmark, Poland, and the Balkan countries. In March, 1927, the epidemic was practically at an end. While the cases were generally mild, the wide geographic distribution of the epidemic resulted in a gross mortality in Europe that was estimated by the health section of the League of Nations as "not less than 100,000, and possibly more, deaths." Influenza was also epidemic in Japan and China, but apparently not in India nor Africa.

Although bubonic plague occurred here and there in Asia, Africa, Europe, and South America, it was less prevalent than during the preceding year, and much less than in 1921–22, 1922–23, and 1923–24. As usual, India remained the principal focus of infection, having over nine-tenths of the cases reported throughout the world; but there, fewer cases were evident in 1926–27 than in any year during the past three decades. The disease was less prevalent also in Siam, French Indo-China, Java, and Peru. Despite this decrease in incidence, plague is still widespread. In Africa it appeared in Egypt, although not epidemic as in previous years, and in Algeria, Tunis, Angola, Uganda, Nigeria, Kenya, Tanganyika, Union of South Africa, and Madagascar. In Asia, cases were reported in Iraq, French Indo-China, Kwang-Chow-Wan, and in Fukien, Kwang-Tung, and Anhwei Provinces of China proper. In Europe, sporadic cases appeared in certain parts of Russian territory, especially the Far Eastern Republic, the Astrakhan Government and the Republic of the Cossacks, and in Grand Lebanon, Greece, Turkey, Portugal, and the Azores. In South America the principal countries affected were Ecuador (Guayaquil) and Peru, although sporadic and imported cases were reported from a number of other places. In brief, the disease continued to be pandemic, but its intensity was less pronounced. By reason of its wide geographic distribution and the method of its spread, it remains one of the major pandemic diseases which will require the constant vigilance of health authorities in all countries.

Cholera, still the scourge of India, did not diminish greatly there, and appeared with more than usual prevalence in countries eastward as far as Korea and Manchuria. The disease was possibly not quite as prevalent as in the preceding year in Bengal, but an extensive outbreak occurred as early as March, 1927, in the southern part of Bombay Presidency. In the early part of 1927 the disease was more prevalent in India as a whole than during the preceding two years. A severe epidemic occurred in Siam in 1926, reaching its peak in July. The disease was unusually severe in French Indo-China. In China, cholera was prevalent at various periods during the year in most provinces and epidemic in a number of localities. The most serious epidemic in a port was at Shanghai, where 1,238 cases were reported in the International Settlement between July 25 and September 11, 1926. In Korea the disease occurred in September, 1926, 250 cases having been reported. In Manchuria the most extensive outbreak since 1919 occurred in the late summer and early autumn of 1926. The disease did not extend west of India nor east of Korea.

It is significant that yellow fever was confined to one section of the continent of Africa. Cases were reported on the Gold Coast, in Nigeria, Liberia, Senegal, the upper Volta, French Sudan, Togoland, and Dahomey. The disease was more prevalent on the Gold Coast during the first half of 1927 than for six or more years. With the exception of one case which occurred at Bahia, Brazil, July 4–10, 1926, the disease was not reported in the Western Hemisphere during the year. This highly satisfactory condition is of the greatest importance to all of the American Republics.

While devastating epidemics of typhus fever, which swept Russia after the World War, have definitely passed, that country and the countries on its western and southern borders still constitute an area in which the disease is endemic. The prevalence of the disease in the Ukraine was less than in the preceding year, but in the remainder of Russia no great change is discernible. In Poland and in other States bordering on Russia the disease manifested no marked increase or decrease, with the exception of Rumania, where the incidence was somewhat higher than for the two preceding years. Some increases, in incidence, were also reported on the North African coast, especially in Algeria. In the Union of South Africa there was a decrease in cases reported. The decline of typhus fever incidence in Chile since 1920 continued during the past 12 months. Sporadic cases were reported in Mexico. In the Irish Free State a slight epidemic of 24 cases was reported in April last. However, there has been no marked spread of the disease from any of its endemic centers in any part of the world during the year 1926–27. Relapsing fever, on the other hand, seems to be continuing its eastward march through the region lying south of the North African Desert belt, having reached Anglo-Egyptian Sudan in epidemic and apparently virulent form. This area, however, is the only one where relapsing fever is a serious problem.

Smallpox has markedly decreased in continental Europe. Even in Spain, where the death rate from this disease has been high, a definite improvement has been evident. In England and France, however, a mild type of the disease was more prevalent than in the preceding year. Whether the mild type of the disease will supplant its severe form, or the severe form will spread where neglected vaccination exists, it is impossible to say. The fact remains that smallpox is endemic throughout the world, and indubitable evidence accumulates from countries where vaccination is enforced that the disease in any of its forms can be prevented by vaccination.

Generally speaking, the record of typhoid fever during the past year in countries where some sort of health administration has been established, has not indicated any great degree of further progress in effective control. On the contrary, two serious local epidemics have occurred—a water-borne epidemic last September in Hanover, Germany, with about 2,500 cases and 500 deaths, and the milk-borne epidemic in Montreal, Canada, this spring, which was accompanied by an even greater incidence and mortality. The latest reports for 1927 available indicate some increase in England, France, Germany, Poland, Czechoslovakia, Austria, Hungary, and Italy. In Japan, on the other hand, a marked reduction has taken place.

Except for small epidemics in England and Germany in the late autumn of 1926, poliomyelitis was less prevalent during the past 12 months than for some years. So far as can be judged from available reports, the influenza epidemic in Europe was not accompanied by epidemic encephalitis. An outbreak of encephalitis occurred in Japan from August to October 1926. No unusual prevalence of cerebrospinal meningitis was reported, except slight increases in Great Britain and the Netherlands.

Diphtheria, scarlet fever, measles, and whooping cough have not manifested an unusual prevalence during the past year, except a somewhat higher than normal incidence of scarlet fever in Poland, Germany, and the Netherlands. In 1926, measles in Scotland and Ireland caused about as many deaths as diphtheria, scarlet fever, and whooping cough combined. On the other hand, scarlet fever was very fatal in eastern Europe, the mortality rate of Moscow, Leningrad, Ukraine, ranging from 40 to 68 per 100,000 in 1926. Measles continued to be accompanied by an excessive mortality in Egypt and elsewhere in the East. Available statistics of tuberculosis mortality in the larger European cities indicate a decline in the tuberculosis rate in 1926. The decrease in deaths in 1926 from 1925, in a considerable group of widely scattered cities in Europe, was 7.5 per cent. The decrease in German towns since 1923 has been remarkable, the tuberculosis death rate in 1926 being 99 per 100,000. While increases in the tuberculosis death rates in several Spanish cities, Manila, and Bombay were in sharp contrast to this rate, the general trend of the disease is encouraging abroad as well as in our country.

HEALTH CONDITIONS IN THE UNITED STATES

The health of the people of the United States was generally good during the fiscal year 1927 as compared with preceding years. Reports of communicable diseases to the Public Health Service, of deaths to the Bureau of the Census, and the experience of the large life-insurance companies all indicate low death rates for most causes and generally good health conditions, although statistics are not yet complete.

At the beginning of the fiscal year 1927, 196 cases of tularaemia had been recognized in the United States. During the fiscal year 1927, 173 additional cases were recognized and the disease was reported in 10 additional States, thus increasing the geographical distribution of this new disease to 36 States, the District of Columbia, and Japan.

During the calendar year 1926 there was a decrease in the number of cases and deaths from smallpox. Fortunately, in most parts of the country the disease was of a mild type, but in some sections the disease existed in severe form. Out of a total of 30,450 cases of smallpox reported during the year from 41 States, there were 380 deaths. Two-thirds of these deaths occurred in the Pacific Coast States, although these States reported approximately only one-fifth (6,764) of the total number of cases. Had the disease not manifested itself in mild form, the total number of deaths might have been much greater; had the vaccination requirements been efficiently enforced, the total number of cases would undoubtedly have been much less. In view of the demonstrated protective value of vaccination it is difficult to explain why this preventive measure is not universally employed.

No cases of cholera or yellow fever were reported in the United States during the fiscal year. With the exception of two cases of plague which were apprehended aboard ship at the United States quarantine station, New Orleans, La., no cases of human plague were reported. Discovery of three cases of plague among rats at Los Angeles, Calif., indicates however, that the disease continues to prevail among rodents, especially ground squirrels, in certain sections of California, and requires vigilance on the part of the health authorities concerned for the protection of the human population, especially in urban centers.

Cases of typhus fever have occurred now and then in New York, N. Y., for many years. On account of the mildness of symptoms the disease was for a time regarded as a separate entity under the designation of " Brill's disease." It was subsequently proved to have been a mild form of typhus fever. A similar mild type is now being reported in increasing numbers from many States. During the calendar year 1926 a total of 160 cases and 5 deaths was reported from 11 States; and in connection with the investigation of the disease, reports have been received of the occurrence of cases in five additional States. Within this period, therefore, the disease is known to have occurred in mild form, and, so far as is known, in limited numbers, in Alabama, California, Connecticut, Florida, Georgia, Illinois, Maryland, Missouri, New Jersey, New York, North Carolina, South Carolina, Oklahoma, Tennessee, Texas, and Virginia. On account of its widespread distribution and the lack of evidence of spread through lice as in Old World typhus, this disease constitutes an important public-health problem requiring thorough investigation.

During the calendar year 1926, 195 cases of Rocky Mountain spotted fever and 56 deaths from the disease were reported from 9 Western States. At the disease has become better understood it has been recognized over a wider area. Originally reported from Idaho and Montana, cases have been reported, as stated above, from California, Colorado, Idaho, Montana, North Dakota, Oregon, South Dakota, Washington, and Wyoming, and these reports are probably not complete.

In connection with investigations of Malta fever, reports have been received and serum diagnosis has been made of 15 cases, as follows: One each from California, Iowa, Indiana, Maryland, and Michigan; two each from Ohio, Pennsylvania, New York, New Jersey, and Virginia. The occurrence, in so many States, of this disease, hitherto considered exotic, is of great significance from a public-health standpoint.

The United States fortunately escaped the epidemic of influenza which swept over Europe during the winter of 1926–27. Comparatively few cases of this disease were reported in this country during the fiscal year, and these were generally mild with few complications. The typhoid-fever incidence, which had increased somewhat in 1925 over the preceding year, declined during the calendar year 1926, the reports showing a reduction in both cases and deaths from this disease as compared with 1925. The case and death rates for diphtheria for the calendar year 1926 were the lowest ever recorded, being 80.5 cases per 100,000 population, with 7.1 deaths per 100,000, in 41 States. During the six months of the calendar year 1927 there was an increase of diphtheria cases and deaths, but the numbers were small as compared with those which prevailed a few years ago. While the disease usually fluctuates in cycles of several years' duration, the general downward trend in the death rate is undoubtedly associated with the discovery and use of antitoxin.

The death rate from tuberculosis showed a continued decline, while heart disease, diabetes, and nephritis, which had been claiming an increasing number of lives in recent years, showed a lower rate than was expected.

The death rate for the calendar year 1926, in 28 States, from all causes, was 12.1 per 1,000 population. This is slightly higher than the rate for 1925, which was 11.7. The increase was probably caused principally by the large number of deaths from respiratory diseases. Measles was also unusually prevalent.

The birth rate in the birth registration area decreased from 21.1 births per 1,000 population during the calendar year 1925 to 20.1 in 1926. This is a continuation of the trend which has been noted since 1915, when the birth registration area was established. In that year the birth rate was 25.1 per thousand. The phenomenon of decreasing birth and death rates is not peculiar to the United States; it has been noted in most civilized countries.

The infant death rate is an important index of the efficiency of public health work. In the United States this rate has been decreasing for some years, although in 1926 there was a slight increase. Reports from 28 States give the rate of 72.8 deaths of infants under 1 year of age per thousand births in 1926, while the rate for 1925 in the same States was 71.5 per thousand births.

The year was marked by two important international official conferences for the improvement of existing treaties or conventions regulating maritime procedures. The Sanitary Convention of Rome, as revised in the Sanitary Convention of Paris, signed by this Government, was generally recognized as having become antiquated, because of advances in medical science; and the United States, as well as Great Britain, has been urging a revision. The representatives of 60 governments met in Paris, this Government being represented by Surgeon General Cumming and Doctors Taliaferro Clark and W. W. King, with technical advisers. The diplomatic controversy as to whether the League of Nations or the Office Internationale d'Hygiène publique should be charged with administration of the provisions of the treaty was settled by agreement to the viewpoint of this Government supported by Great Britain and France.

The technical provisions were revised to meet generally the present knowledge and conditions, though the United States made reservations to protect fully its interests.

I recommend the ratification of the convention with the reservations made by our representatives.

A conference of the directors of health of Pan American Governments was held in Washington, under the chairmanship of Surgeon General Cumming, as Director of the Pan American Sanitary Bureau, during which constructive progress was made in matters pertaining to Pan American public health and sanitation.

The year was further marked by the visiting in Washington of an International Congress on Tuberculosis, which was opened by Secretary Mellon.

PREVENTION OF THE INTRODUCTION OF DISEASES FROM ABROAD

The year was notable also on account of the small numbers of quarantinable diseases that threatened our boundaries. No cases gained entrance to the country, although 17 cases of smallpox, 2 cases of leprosy, and 2 cases of human plague were apprehended at domestic quarantine stations and detained. This fortunate situation was due not only to the system of control at domestic ports, but to the system of medical inspections maintained at certain foreign ports from which diseases are likely to spread, on account either of the presence therein of quarantinable diseases or the volume of commerce emanating therefrom.

At domestic ports during the year, 20,284 vessels, 820,793 passengers, and 1,140,922 seamen were inspected on arrival by quarantine officers; at insular ports, 2,991 vessels, 169,461 passengers, and 226,373 seamen were inspected; and at foreign ports, 5,954 vessels, 424,172 passengers, and 272,873 seamen were inspected prior to embarking for the United States.

Of the passengers who embarked at European ports, 60,774 were vaccinated and 62,995 were deloused under the supervision of medical officers of the Service. The clothing and baggage of these passengers, amounting to 63,472 pieces, were disinfected.

A total of 7,116 vessels were fumigated either because of the occurrence of diseases aboard or for the destruction of rodents. Thirty-one thousand and seventy-three rats were recovered, of which 18,334 were examined for plague infection.

Realizing that the prevention of the importation of epidemic diseases is based on scientific knowledge which is constantly advancing, action has been taken to improve quarantine methods, making them more efficient, more precise, and less burdensome to commerce. Fumigations are now based more upon the actual conditions of vessels and less upon routine procedure. On account of their special construction, tank ships afford little harborage for rats. Observation showed that fumigation of these vessels yielded practically no rats, except in certain instances which could have been foreseen by careful inspection. Fumigation of this class of vessels, therefore, is now being done only after inspections which show actual rat infestation.

During the fiscal year much consideration has been given to the subject of exemption from fumigation of ships from noninfected ports, provided they show no rat infestation and very slight rat harborage. In order to maintain a vessel in a rat-free condition, or at least have the rat population reduced to negligible numbers, it is necessary either to fumigate at least every six months or that the vessel be rat proofed. Many steamship companies have come to realize the importance to public health and the economic value of rat proofing their vessels, so that during the past year a great many of the larger passenger ships have been made rat proof and are being maintained in that condition.

MEDICAL EXAMINATION OF ALIENS AT AMERICAN CONSULATES ABROAD

The medical examination of applicants for immigration visas in foreign countries of origin by medical officers of the United States Public Health Service, first inaugurated August 1, 1925, in England, Scotland, and Ireland, was carried out on a more extended scale during the fiscal year ended June 30, 1927. The demonstrated advantages of the new system to the prospective immigrants, to the communities of origin, and to transportation companies resulted in additional requests to the State Department for the extension of the plan to other countries. As a result of official representation and agreement, medical examinations by service officers were inaugurated July 1, 1926, at five American consulates in Germany, namely, Berlin, Bremen, Cologne, Hamburg, and Stuttgart; at Bergen and Oslo, in Norway, July 15, 1926, at Copenhagen, Denmark, July 19, 1926, at Goteberg and Stockholm, Sweden, and at Warsaw, Poland, September 1, 1926. These additions increased to 20 the total number of American consulates where medical examinations of applicants were made during the fiscal year, representing 11 countries, counting North Ireland and Scotland as separate countries.

During the fiscal year ended June 30, 1927, a total of 148,539 applicants for immigration visas were given medical examinations. Of the total examined, 12,987, or 8.74 per cent, were found to have mental or physical disabilities; 6,580, or 4.43 per cent of the total examined, were refused visas for medical reasons.

The advantages of the making of medical examinations of aliens prior to departure are now generally recognized.

At domestic ports 881,699 alien passengers and 996,198 alien seamen were examined by medical officers under the immigration law. Of this number 24,292 passengers and 3,117 seamen were certified for various diseases and disabilities coming under this law. The most important causes of certification of alien passengers were trachoma, 412; tuberculosis, 213; feeble-mindedness, 168; insanity, 87; syphilis, 96; gonorrhea, 354. Of alien seamen certified, 112 were for trachoma, 44 for tuberculosis, 420 for syphilis, 428 for chancroid, and 915 for gonorrhea. The effect of these examinations and the consequent exclusion by the Immigration Service of large numbers of persons afflicted with the diseases and disabilities above mentioned can not be doubted.

PREVENTION OF THE SPREAD OF CONTAGIOUS AND INFECTIOUS DISEASES IN INTERSTATE COMMERCE

Due to the occurrence of the serious epidemic of typhoid fever in Montreal, Canada, from March to July, 1927, grave apprehension was felt by State and local health authorities lest the disease spread into the United States. At the request of the United States Department of Agriculture, through the Bureau of Chemistry, inquiries were made into the incidence and distribution of the disease in Montreal, and recommendations were made to the Department of Agriculture resulting in the placing of an embargo on milk and cream from Montreal and over an area within 200 miles of that city. Later, upon evidence that the embargo might safely be removed, recommendation to this effect was made, with the exception of milk and cream from Montreal, against which the embargo continued in force.

On account of the continuance of the epidemic in Montreal over a period of four months, and because of apparent lack of adequate control, many requests were received from State health officers as to measures necessary for the prevention of the spread of the disease into the United States, and from organizations and citizens who desired to visit that city. With the permission of the Canadian authorities, a board of officers of the Public Health Service was detailed to make a survey of typhoid fever conditions in Montreal and secure the information needed for adequate protection of United States citizens. This board submitted a report stating that the epidemic was due to infected milk and advising that all milk and cream from sources within 100 miles of Montreal be Pasteurized under official supervision before use. The board further advised that, under conditions then existing, Montreal was not a comparatively safe city for visitors.

Measures for safeguarding shellfish from pollution, measures for insuring safe drinking water supplies on interstate carriers, both cars and vessels, and measures for the protection of interstate travelers in the national parks, have been carried out effectively. No new outbreaks of bubonic plague have occurred within the country during the year, although endemic plague foci exist among the ground squirrels in California and continue to menace the health of cities of that State.

In September, 1926, a violent hurricane which devastated portions of Florida threatened to become a menace to the public health of the citizens of that State. This was due not only to the damage done to property of citizens, but to the large number of visitors from other States in Florida at that time. As soon as the news of the disaster reached Washington, medical officers and sanitary engineers were sent to the affected area to cooperate with State and local authorities in the prevention of the spread of epidemic diseases likely to follow disasters unless immediate preventive measures are taken. Fortunately, the local and State health agencies were well organized and outside assistance was needed for only a brief period when conditions were acute. The aid given to local authorities in the prevention of the spread of smallpox and other epidemic diseases and in the protection of water supplies and the disposal of waste was timely and no serious outbreaks of diseases occurred.

MEASURES FOR THE PROTECTION OF HEALTH FOLLOWING THE MISSISSIPPI FLOOD

The floods affecting the Mississippi River and its tributaries during the late spring and early summer of 1927 resulted in a far greater disaster from an economic standpoint than that which occurred in Florida. In fact, it is the opinion of those who visited this region that the economic losses and human suffering in the flooded area exceeded those in any previous disaster in the country. Moreover, the dangers to the health of the citizens of the region was such as to require emergency aid from Federal, State, and local health authorities, as well as volunteer agencies, including the American Red Cross. On request of Secretary Hoover, acting chairman of the committee appointed by the President to cooperate with the Red Cross in emergency relief work in the area of the Mississippi flood, an officer was detailed to serve at the national disaster relief headquarters of the American Red Cross, Memphis, Tenn., as liaison officer between the Red Cross organization and the National and State public health officials. This officer was enabled to determine from the State health officials in the flooded area their most urgent needs as to public health personnel, and to secure the necessary assistance from national, State, and local health agencies official and unofficial throughout the country. Urgently needed biologic products, including smallpox vaccine, anti-typhoid vaccine, and antitetanic serum, were supplied in large quantities through these agencies.

Within a period of 10 days from the beginning of the flood emergency, 14 Public Health Service officers, trained in emergency health work and familiar with the localities affected by the flood, were in the field to assist the State health authorities. On these men the State health officials placed their main reliance for assistance in the organization and general supervision of emergency work for the prevention of the spread of epidemic diseases.

The response of local and unofficial agencies to the appeal of the Public Health Service for trained personnel was immediate and generous, and resulted in meeting the important public health needs of the flooded area within a comparatively short time.

With the recession of the flood and the return of the temporary personnel to their respective organizations, the need arose for the development of a plan for providing public health protection to the inhabitants of the devastated areas during the period of rehabilitation. Such a plan was accordingly developed at a conference of Public Health Service officials, State health authorities, and representatives of the American Red Cross and the International Health Board, held at New Orleans, La., June 5, 1927. The plan, which provides for the establishment of county health units in the affected area through the cooperation of the United States Public Health Service and the international health division of the Rockefeller Foundation with the State and local authorities, became effective July 1, 1927, and followed in logical sequence the emergency work performed by the American Red Cross. It was felt that, by this means, assurance could be had that the spread of smallpox, trachoma, typhus fever, and other epidemic diseases would be averted. In developing the preventive plan for operation during the period of rehabilitation, advantage was taken of the experience gained in the establishment and conduct of rural health work in other communities. In fact, it was observed in the areas affected by the flood that those counties which were provided with whole-time efficient health service were able to meet the emergency needs promptly and efficiently. As a result of the demonstration of the value of these county health units in the flood emergency, it was evident that this method should be adopted and put into operation for the prevention of the spread of epidemic diseases and for the sanitation of the areas affected.

While the urgent emergency was met by the measures adopted, a serious public health situation will continue to exist until the damage done by the flood has been remedied. The people in this area will be exposed for an indefinite period to adverse health and economic conditions. The damage to the water supply and waste disposal systems and the curtailment of adequate food supply are likely to give rise to conditions adversely affecting health. Inquiries made since the flood indicate the increased prevalence of pellagra in certain portions of the flooded area. While this situation is attributable not alone to the flood but to the partial failure of crops, there is every likelihood that the adverse conditions brought about by the flood will increase the prevalence of pellagra as well as of certain other diseases. Such aid as is possible is being rendered in these communities for the prevention of the spread of epidemic diseases and for the suppression of diseases due to adverse economic conditions. In the consideration of legislation to aid in the rehabilitation of this vast area, account should be taken of the health needs and sufficient appropriations provided therefor.

MEDICAL CARE AND TREATMENT OF MERCHANT SEAMEN AND OTHER GOVERNMENTAL BENEFICIARIES

Medical and hospital treatment of sick and injured American merchant seamen and other governmental beneficiaries was provided as in previous years. This is the oldest function performed by the Public Health Service; in fact, it was for this specific purpose that the service was organized under the act of July 16, 1798. Probably at no time in the past 129 years has the aid thus rendered by the Government to American merchant vessels been of greater value or more necessary to keep the flag on the seas.

More than 300,000 beneficiaries apply annually at 152 ports of the United States and its insular possessions where marine hospitals and other relief stations are maintained for the giving of hospital and out-patient treatment and for the making of physical examinations. The volume of the work performed at these stations is evidenced by the fact that 1,288,061 hospital days' treatment were given, mostly to merchant seamen and Coast Guardsmen, and 632,341 separate out-patient treatments were administered. American seamen are the principal beneficiaries; they received 67.4 per cent of all the hospital treatment furnished. The personnel of the United States Coast Guard, numbering about 11,000 officers and men, comprises also a highly important governmental agency entitled to medical care and treatment; from this agency came 14 per cent of the total clientele of hospitals and dispensaries of the service. Twenty-four medical and dental officers are assigned for duty on the cruising cutters and at important shore stations, and 99 contract physicians serve small Coast Guard and Lighthouse units remote from other organized medical service. Medical supplies are furnished to all vessels and shore stations of the Coast Guard and vessels of the Lighthouse Service. Patients of the Employees' Compensation Commission now constitute about one-fifth of the total clientele; the requirements have been greatly increased by the longshoremen and harbor workers' compensation act affecting approximately 400,000 longshoremen and harbor workers.

The number of lepers collected from different parts of the country and segregated at the National Leper Home at Carville, La., has gradually increased. On June 30, 1927, there were 266 lepers there under treatment. Ninety-three have died since the institution became a Federal hospital in 1921. Approximately 450 tuberculous patients are constantly under treatment at the marine hospitals, half of whom are afforded the facilities of the tuberculosis sanitorium at Fort Stanton, N. Mex. Patients with venereal diseases, chiefly seamen from merchant vessels and the Coast Guard, constitute 20 per cent of all patients treated. The marine hospitals located in ports where there are no other Government hospitals have continued, as heretofore, to admit patients of the United States Veterans' Bureau and from the armed forces as well as immigrants, for which latter class the marine hospital at Ellis Island is chiefly maintained.

Dentistry has become a routine part of hospital and out-patient treatment. At a cost of 3.9 cents per hospital day it has shortened the period of hospital treatment, and added greatly to the resources of medical science. The traditional indifference of health agencies and research institutions to the preservation of the teeth and the prevention and cure of dental diseases has long been an anomaly of medical practice. If normal teeth were devoid of vital coordination with the tissues that hold them in place instead of being, as they are, living parts of the human body performing functions and undergoing deterioration that may be the cause of distress, disability, or death, this attitude would be more clearly understood. The fact that dental caries and oral abnormalities are the most prevalent of all diseases of either child or adult life, and as yet no ways have been found to prevent the general existence of caries, or obviate the general occurrence of disease in the tissues that surround the teeth, makes necessary as a vital part of public health work the inauguration of efficient oral health service as well as research into these diseases which occasion so much distress among humanity.

MEDICAL EXAMINATIONS OF GOVERNMENTAL BENEFICIARIES AND APPLICANTS FOR GOVERNMENT POSITIONS

In addition to their other duties, medical officers on duty at marine hospitals and other relief stations throughout the country examine ship's officers of American vessels in first aid, give medical advice by radio to inquiring ships at sea, issue permits to ships for medicinal liquor and narcotics, and bills of health to outbound vessels, make special investigations for claims for compensation for injuries for the Employees' Compensation Commission and for the Committee on Claims of the House of Representatives, vaccinate Government employees engaged in handling mail or in interstate or foreign travel, inspect immigrants and treat sick immigrants and detained Federal prisoners.

Medical officers also make large numbers of physical examinations annually on behalf of other agencies of the Government. During the fiscal year just ended these physical examinations totaled 103,943. More than 20,000 of these were made, on behalf of the Civil Service Commission, of applicants seeking Government positions, and 10,190 of the total mentioned were made for the Employees' Compensation Commission. This work has increased rapidly in recent years. Its importance is recognized by the governmental agencies concerned. In consequence, it is not possible with existing facilities to comply with all requests for physical examinations of applicants for Government positions or for those employees sick or injured in the performance of their work.

The Government is the largest employer of labor. In keeping with the accepted relationship of employer and employee in industry, the Government has made provision for employees injured in line of duty and for pensions for disability and old age. In the interest of the public employees themselves, therefore, it is essential to avoid improper placement of physically unfit. This may be done by means of medical examinations of all candidates for employment, and physical examinations, as may be necessary, of those employed in order to guard against injuries and disabilities and safeguard the health of workers. Provision should accordingly be made whereby this highly useful work may be extended and all physical examinations requested by governmental agencies be accomplished.

CONTROL OF VENEREAL DISEASES

Because of the exceptional facilities offered in hospitals of the Public Health Service for the study of syphilis and gonorrhea, important investigations have been undertaken at the marine hospital at New York, N. Y., of more effective methods of prevention and treatment. Over a period of many years about 20 per cent of all patients treated by the service were ill as the result of venereal diseases. In 1926 this percentage was slightly lower, namely, 17 per cent. By reason of this relatively large proportion of this class of diseases any success attained through investigation should result in still further reducing this percentage and consequent saving to the Government. It should also result in a lower incidence of these diseases among the population generally.

A number of other studies of venereal diseases have been initiated with the cooperation of leading scientific institutions—one at the University of Pennsylvania in nonspecific protein therapy in syphilis; one at Johns Hopkins University concerning immunity in syphilis; one in Chicago in connection with the diagnosis treatment of gonorrhea; and one at St. Louis in the thermotherapy of syphilis.

The studies previously undertaken at Hot Springs, Ark., where a venereal disease clinic is maintained, have been continued. These relate especially to problems of clinical administration and chemotherapy. Of particular interest has been the influence of an increase in body temperature from hot baths as a therapeutic measure. The studies mentioned have been undertaken after consultation with and upon the advice of leading specialists in the country who have given freely of their time in conferring regarding the urgent needs in this field.

For the control of venereal diseases it is essential to determine more accurately their prevalence among the general population and variations in the rate of infection. In cooperation with the American Social Hygiene Association, studies have accordingly been made in a number of cities and counties to determine the total number of cases of syphilis and gonorrhea under treatment on a given date by every physician, and by every clinic, hospital, and other institution in the community. The results thus far show that from 1 to 2 per cent (average 1.5 per cent) of the population is constantly under treatment for these diseases. These studies are to be extended, with a view to establishing an annual incidence rate for these diseases and the percentage of the population in the several age groups infected. Of even greater importance than determining the prevalence of the diseases will be the establishment of a rate with which variations in future years may be compared. A more accurate measure will accordingly be available to determine the effectiveness or ineffectiveness of various measures for the control of these infections in the future.

In conformity with State and Federal policy, the activities of the Public Health Service in relation to venereal diseases largely include investigations and the dissemination of information in relation thereto. Venereal disease control work has been financed by the States during the past several years. In keeping with the policy, however, cordial cooperation has been maintained by the service with State authorities. Conferences have been held, educational material has been distributed, and information compiled and made available in published form. As evidence of the extent of anti-venereal disease work during the nine years since the establishment of the Division of Venereal Diseases, it may be stated that 3,105,952 cases of venereal diseases have been reported by State boards of health; nearly 800 clinics have been established by various agencies, at which 1,023,326 patients have received 16,330,994 treatments, 62,594 lectures were delivered to audiences totaling 8,530,205 persons, and 34,676,512 pieces of literature have been distributed. Five new publications were issued during the year. By means of correspondence, studies were made of the extent of the inclusion of sex hygiene instruction in high-school curriculum. On account of the financial burden brought about by venereal diseases and the effect on the health of the population, especially women and children unknowingly infected, provision should be made for the extension of special investigations of this subject.

INVESTIGATIONS OF PUBLIC HEALTH PROBLEMS

The investigative work of this service has continued to justify the confidence which is now placed in the submitting of public health problems to scientific analysis as a means of devising practical solutions.

The larger continuing projects have been successful in bringing studies to completion, making possible the taking up of new topics presented by advancing knowledge or by changing environment, while many contributions of value have come from the smaller studies.

The stream pollution studies have progressed favorably in both their scientific and applied departments. The laboratory work in the chemistry and biology of natural and artificial purification of polluted water has revealed new details, while the studies of plant operation and of actual conditions in streams and lakes have been of immediate practical benefit. The cooperative study of the Mississippi River where it forms the boundary between Minnesota and Wisconsin was brought nearly to completion during the year, making possible the inauguration of remedial measures.

The malaria studies have demonstrated the possibility of airplane control by spreading larvicidal dust over otherwise inaccessible breeding areas, thus adding a new means of defense against malaria. The limitations of the method remain to be determined, and the end of the fiscal year found active experimentation for this purpose under way. The studies of screening of poorly constructed houses of a type prevalent in certain malarious regions was particularly opportune, and placed a valuable means of control at the disposal of those responsible for the sanitary rehabilitation of the flooded areas of the Mississippi Valley. Other studies of impounded waters, habits of mosquitoes, etc., were continued with satisfactory progress.

The studies of health problems in industry have progressed along definite well-planned lines of inquiry. Portions of the major topic of dust in industry have been completed. The newly prevalent process of spray coating has been investigated and a report is in preparation. Studies of industrial morbidity have been continued and results of value to employers and employees obtained. The studies of illumination of workrooms have yielded further data on the relation between the lighting and the amount and character of work performed and the effects on the visual health of the workers. An interesting study of the loss of available daylight due to smokiness of the atmosphere was carried on. The posture studies on high-school children, destined for application in industry, were completed, and the advantages of exercise to health have already appeared in the analysis. The details of many other industrial investigations will be found in the expanded portion of this report.

In the child health investigations the continued studies of the physical stature, growth, and development of school children in a representative small city were prosecuted along the original lines.

Analysis of certain phases of the observations were prepared for publication. Other activities consisted of studies of negro children for comparative purposes, of daylight illumination of schoolrooms, of vision, and of infant mortality.

The office of statistical investigations has continued to render valuable aid to the field studies of this service, and has issued a number of important publications on subjects of interest to health officials and physicians.

The Hygienic Laboratory has maintained its traditional excellence of work and output. The timeliness of the studies on pellagra have been demonstrated by the application of results to an unusual prevalence of this disease in the flooded areas in the South. The value of the studies on tularaemia is shown by the fact that the disease has now been found in 34 States and the District of Columbia, and that transmission by another form of tick, in addition to that already known, has been demonstrated. By the publication of suitable papers it is hoped that knowledge of the means of recognition and prevention of these diseases has been furnished to health officials and physicians. The cooperative studies of tuberculosis in which the researches of a number of outstanding institutions are coordinated, have made excellent progress and constitute a demonstration of the value of such an arrangement when similar or related work is being carried on in a number of places. The studies of Malta fever have furnished further evidence of the danger to man, not only of contracting the disease from goats, but also of acquiring an indistinguishable condition from cattle. The studies in typhus fever have proved opportune, inasmuch as there is an apparent increase in the incidence of this disease in portions of the country; and while there is no definite menace of a large epidemic, the need for more knowledge is urgent. Studies of trachoma, pneumonia, epidemic encephalitis, and vaccination sequelae have been continued with satisfactory progress. Further studies of narcotic addiction indicate a reduction of the numbers of habitués, and confirm the opinion previously arrived at that addiction is, in general, a symptom of neuro-phychopathic make-up. Work on the critical assembling of data on the parasites of man and other hosts and the preparation of results for publication have made good progress. Studies on syphilis have indicated the possibility of more rapid progress in the control of this disease through more intensified forms of treatment. Further advance has been made in the knowledge of the method of action of potent drugs which may lead to improvements in their preparation. Good progress has been made in the study of the universal phenomenon of oxidation as applied to questions of public health interest. The work of controlling the sale of biologic products has continued to furnish an important service to the public. The outstanding accomplishment of the year in this respect has been the preparation of standard test substances for the potency of biologic products used in the prevention and treatment of scarlet fever. A license was issued for a serum to be used in the treatment of snake bites.

The milk investigations have had a very successful year. The standard ordinance advocated by the service has now been adopted in 160 cities and its operation is being watched and measured with a view to making improvements and to determining its range of applicability. The importance to both health and industry of establishing some generally recognized standard can not be overemphasized. In addition to greatly improving the sanitary quality of milk, the ordinance referred to has had the effect of nearly doubling the sales of market milk. Excellent progress has been made in the task of testing pasteurizing apparatus for the purpose of ascertaining defects of design, construction, and operation, and the development of more efficient machines.

The studies of Rocky Mountain spotted fever have continued to yield most encouraging results. Nearly 1,500 persons in the infected area were vaccinated with the preparation devised and manufactured by service officers. Two nonfatal cases of infection occurred among the vaccinated, while 30 cases with at least 12 deaths were known to have occurred among nonvaccinated personnel similarly exposed. This, however, is not considered conclusive evidence of the value of the vaccine. More convincing is the fact that five mild infections, with prompt recovery, have occurred in vaccinated persons who were much exposed to laboratory infection, whereas previous to the use of vaccine the five laboratory infections which occurred were fatal.

Investigations of administrative health practice resulted in the publication, during the year, of a report on methods used in the 100 largest cities of the United States, thus putting in the hands of all health officers a means of learning what is being done throughout the country and visualizing improvements which might be introduced in their own communities.

The office of goiter investigations has been active during the year, both in making surveys of goiter prevalence and in special studies of various phases of the problem. A survey was conducted in the State of Oregon which revealed a smaller degree of prevalence than had been expected. Resurveys of school children indicate marked improvement in one large city. Several publications have been issued, and a voluminous correspondence with persons seeking information has been conducted.

The studies of influenza have consisted principally of conducting the statistical analysis of the very large bulk of data collected up to this time by means of the questionnaire method, in which selected groups of persons reported periodically on any respiratory affections from which they suffered. Progress reports have been issued, but the complete report is still in preparation.

The survey of salt-marsh mosquitoes conducted with the cooperation of the Bureau of Entomology, Department of Agriculture, completed its first season of work with a good record of progress. It was found that although there are nearly 6,000,000 acres of salt marsh along the Atlantic and Gulf coasts, the acreage actually requiring mosquito control can be expressed rather in the tens of thousands. Reconnaissance surveys have been made of representative areas throughout the whole coast line, and detailed studies were conducted at several strategic points. Studies have been made of the breeding habits of the five principal species of mosquitos encountered and of methods of eradication.

The studies of nutrition have continued to concern themselves chiefly with pellagra in human beings and with pellagralike diseases in certain experimental animals. This course was determined by exceptional opportunities for applying to persons suffering from or predisposed to pellagra the curative or preventive measures which had proved effective in the lower animals.

The studies of the effects of high-frequency currents upon malignant growths were unavoidably interrupted this year, but the few experiments conducted give sufficient promise of interesting results to warrant their resumption.

At the leprosy investigation station at Honolulu, studies of the epidemiology, course, and treatment of leprosy were continued. The search for cheaper and better preparations to be used in treatment was carried on and the manufacture of the drugs used locally was continued. These investigations have had the effect of rendering the task of isolating lepers throughout these islands an easier one, since the possibility of recovery through medical attention and the hope of parole or cure lead concealed lepers to seek these benefits rather than to avoid detection.

The puzzling disease trachoma, still distressingly prevalent in certain parts of the country, has been the subject of two distinct researches during the year. In one the search for the microscopic cause and possible means of cure has been carried on in the laboratory. In the other it has been sought, by painstaking collection of data at the homes of those afflicted, to learn more about the natural history of this disease and the means of its spread.

COOPERATION WITH OFFICIAL AND UNOFFICIAL AGENCIES

It has been the long-standing policy of the Public Health Service, as the national health agency, to cooperate with official and unofficial bodies for the advancement of the public health. Some of this work is specifically required by law and the remainder is sanctioned by efficient administration. In fact, it is inconceivable that a lack of cooperation on the part of the Federal Government agencies should knowingly exist where cooperation is possible in the interest of efficient administration. By this means, duplication is avoided, expense is reduced, and similar activities are coordinated. Coordination of effort for the safeguarding of the health of governmental employees and for the protection of the public health should be required by law. The volume of cooperative work conducted during the fiscal year 1927 was extensive. It has included practically all the departments and some of the independent establishments of the Government. Mention may be made of the following:

1. With the Department of State: Medical examination of aliens prior to the granting of visas; medical treatment of destitute seamen returned from abroad; administration of foreign quarantine regulations; advising junior consular officers regarding their relation to public health matters.

2. With other branches of the Treasury Department in furnishing medical and sanitary service to the United States Coast Guard; in issuing permits to ships for medicinal liquor and narcotics; in the studies of the lighting of rooms in buildings of the Treasury Department, Coast Guard, and Bureau of Mines; in aiding the Customs Division in preventing violations of the quarantine act because of failure of masters of vessels to secure consular bills of health; and in issuing port sanitary statements to outgoing vessels.

3. With the War and Navy Departments in physical examinations of applicants for Officers' Reserve Corps and citizens' military training camps; in medical and hospital service for civilian employees on the Mississippi River commission, Army Engineer Corps, and Army transports, as pay patients from the personnel of the armed forces; in studies with the Marine Corps to determine the efficiency of Paris green as an *Anopheles* larvicide as spread from airplanes and the feasibility of spreading oil and oil mixed with Paris green from airplanes; and in lectures by members of the staff of the hygienic laboratory before classes of the Army and Navy medical schools, Washington, D. C.

4. With the Department of Justice, in the treatment of Federal prisoners detained at certain ports.

5. With the Post Office Department, by medical testimony in the suppression of frauds; by first aid medical treatment and special physical examinations of employees.

6. With the Interior Department, by medical examination of applicants for civil-service retirement and military pensions; in advising the Bureau of Education regarding sex education and venereal disease control; in the sanitation of public parks; in the operation of the venereal diseases clinic at Hot Springs, Ark.; in administration of medical and sanitary services to the Indian Bureau; and investigation of water and sewerage systems at Indian reservations.

7. With the Department of Agriculture in determining the injuriousness of lead acetate spray residue on fruit and vegetables; in the sanitary inspection of national forests; in surveys of salt-water marsh areas in cooperation with the Bureau of Entomology; by assisting in the enforcement of plant and animal quarantine; in assisting the Bureau of Chemistry in relation to the adulteration of shellfish and in the prevention of the spread of typhoid fever through milk supplies in Montreal, Canada, and vicinity; in aiding the Bureau of Animal Industry in the prevention of anthrax by disinfection of sheep wool from which anthrax-positive samples have been obtained.

8. With the Department of Commerce in physical examinations and instruction in first aid, of applicants for licenses as ships' officers, at the request of the Steamboat Inspection Service; in treatment of beneficiaries of stations and vessels of the Lighthouse Service, vessels of the Coast and Geodetic Survey and stations; furnishing medical supplies to lighthouse vessels; in studies of occupational health hazards among certain employees of the Bureau of Standards; in extension of laboratory and other bureau facilities at Craney Island, Va.; to the Bureau of Fisheries in studies of shellfish; in sanitary inspection of government office buildings in the District of Columbia; in studies of problems of sanitation of the mining industry in connection with the Bureau of Mines; in making provision at designated marine hospitals for the conduct of examinations of applicants for air craft licenses.

9. With the Department of Labor in medical examinations of arriving aliens and quota aliens prior to granting of consular visas, and treatment of detained aliens.

10. With the Civil Service Commission in physical examinations of applicants for employment, for reinstatement, and for retirement.

11. With the United States Shipping Board in the physical examinations of crews.

12. With the United States Employees' Compensation Commission in advising with regard to medical problems connected with compensation and hospital and out-patient treatment of injured Federal employees; in physical examinations and special investigations in the case of special claimants; medical assistance in carrying out the longshoremen's and harbor workers' compensation act.

13. With the United States Veterans' Bureau in physical examinations and hospital and out-patient treatment of ex-service patients.

14. With the International Office of Public Hygiene, Paris, and the Pan American Sanitary Bureau, Washington, D. C., in matters relating to maritime quarantine and international sanitation.

15. With all States of the Union in the collection of morbidity reports and epidemiological data relating to communicable diseases.

16. With 14 States looking to the adoption of standard milk control program.

17. With Minnesota and Wisconsin in studies of the pollution of the upper Mississippi River.

18. With Maryland in the study of its organization of health activities.

19. With Connecticut in the investigation of lead poisoning in a battery plant.

20. With Oregon in studies of the prevalence of goiter.

21. With Hawaii in investigations of leprosy.

22. With the departments of health and education of the District of Columbia in studies of the vision of school children, and with the department of health in the survey of its activities.

23. With North Carolina in studies of water-supply problems.

24. With New Jersey in a special study of venereal-disease clinics.

25. With New York, with a detail of a lecturer on the prevention of venereal diseases, and studies of a proposed method of Pasteurization of milk.

26. With Pennsylvania in advice and assistance regarding experimental studies for the disposal of tannery waste.

27. With Tennessee and Pennsylvania in educational work among the negro population regarding venereal diseases.

28. With all the States in the protection and certification of water supplies used by interstate carriers.

29. With Alabama, Arkansas, California, Georgia, Iowa, Kansas, Kentucky, Louisiana, Missouri, Mississippi, Massachusetts, Montana, New Mexico, North Carolina, Oklahoma, Tennessee, and West Virginia in cooperative demonstrations of county health work in 84 counties in these States.

30. With Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Maryland, Delaware, Virginia, North Carolina, South Carolina, Florida, Alabama, Mississippi, Louisiana, Texas, Oregon, and Washington in investigations of shellfish-growing areas and the development of local sanitary control organizations.

31. With Arkansas, Kentucky, Missouri, and Tennessee in the maintaining of hospitals for the prevention and control of trachoma.

32. With State and local health departments in the distribution of diagnostic serum and cultures of organisms in investigations of special cases of communicable diseases, and in laboratory diagnosis of tularaemia and Malta fever.

33. With New Haven, Conn., in investigations of school hygiene.

34. With Cincinnati, Ohio, in resurveys of goiter, prevalence.

35. With San Francisco and Los Angeles, Calif., in antiplague measures.

Cooperation has also been had with a number of societies engaged in public health activities, namely, the American Public Health Association, the Service of Epidemiological Intelligence and Public Health Statistics of the League of Nations, the International Institute of Statistics regarding public health and vital statistics; personnel of the Milbank Memorial Fund, by furnishing statistical consultant service relating to health demonstrations; the National Tuberculosis Association in research studies of tuberculosis; the Health Committee of the League of Nations in biological standardization of certain important remedies including arsphenamine; the National Safety Council in studies of hazards of spray coating; the International Commission on Zoological Nomenclature; the American Public Health Association in the development and testing of biological methods for the examination of water; the American Social Hygiene Association in studies of venereal disease prevalence in a number of cities and the preparation of educational literature; the General Federation of Women's Clubs in the preparation of a model program for venereal disease control for study and use by constituent clubs; the international health division of the Rockefeller Foundation, in joint activities in demonstrations of county health work and flood sanitation; the American Red Cross in disaster relief during the Florida hurricane and the Mississippi Valley floods.

Cordial cooperation has, of course, been maintained between the several divisions of the bureau. By this means advantage is taken of facilities, including hospital and laboratory, for the prosecution of the special work of a particular division.

On the other hand, cooperative assistance has been received from a number of unofficial organizations and laboratories. Laboratory facilities and other valuable assistance have been furnished in connection with service investigations of trachoma, cancer, pneumonia, leprosy, public-health administration, and industrial hygiene, by the following-named universities: Missouri School of Mines, Harvard, Cornell, Hawaii, Johns Hopkins, and Yale. At the University of Pennsylvania, facilities have been provided for cooperative studies in the protein therapy of syphilis; at Johns Hopkins, arrangements are in effect for studies in immunity in syphilis, that institution furnishing laboratory space, animals, and other supplies. At the McCormack Institute of the Illinois Social Hygiene League clinical and laboratory facilities were furnished for a joint study of serologic and biologic studies relating to gonorrhea. At the Barnhardt Skin and Cancer Hospital, St. Louis, Mo., laboratory facilities have been made available for studies of more effective methods in the treatment of syphilis. The board of commissioners of Leflore County, Miss., in the city of Greenwood, provided laboratory space and equipment for studies of malaria investigations by the service, and the Georgia State Sanitarium, at Milledgeville, Ga., continued to provide facilities for field studies of nutrition. The cooperation rendered by these several agencies is hereby acknowledged. Through this means the conduct of important activities has been made practicable. This mutual relationship on the part of official and unofficial agencies is to be encouraged in the interest of public-health research.

PERSONNEL

Throughout the year continued efforts have been made to increase the efficiency of personnel and to effect savings in expenditures, by consolidation of agencies when practicable and by the coordination of activities in all cases where effective coordination could be accomplished. Continued effort in this direction, however, over a period of years has reduced the opportunity for outstanding improvements in the matter of reduced personnel or in expenditures for other purposes. This is particularly true in view of the fact that during this period the field work of the service has materially increased along certain lines, notably the hospital and relief work and certain field investigations of diseases. Indeed, it is believed that field activities have been unified and coordinated to a point near maximum efficiency.

By reason of reductions of certain appropriations in recent years, notwithstanding changes and increase of activities, it has been impracticable adequately to compensate personnel in all instances. In this connection it is pertinent to mention the acting assistant surgeons stationed at maritime quarantine and immigration ports, and especially frontier stations. The number of ports of entry have increased and the volume of international traffic, especially on the borders, has grown, but it has been impracticable, through limitation of the particular appropriation concerned, to secure and retain experienced physicians at many of these stations.

The duties at some of these stations are so prescribed in outlook that routine changes of incumbents is highly desirable; in fact, it is impracticable, without the provision of mobility, to maintain the professional and scientific personnel at the highest efficiency. Some of these positions should be filled by regular commissioned officers, who are subject to periodic transfers.

In the matter of securing additional trained medical personnel for the duties of commissioned officer, therefore, an even greater need is confronted than was presented in the annual report of last year. This is due also to the further extension, to Czechoslovakia and Italy, of the medical examination of intending immigrants to the United States inaugurated in Great Britain in 1925 and extended to Continental Europe in 1926. Only officers who have had experience in the medical examination of aliens are assigned to this work. The number detailed to Europe at the present time constitutes approximately 16 per cent of the entire regular corps. The quota of regular officers required for permanent duties in the United States has, accordingly, been reduced by five—the number necessarily sent to the two countries mentioned.

In order to provide adequately for this work and for the important duties at border stations, and to provide replacements abroad, triennially in accordance with the regulations the number of regular commissioned officers should be increased.

Enlargement of the corps as contemplated would include the appointment by the President, with the approval of the Senate, of certain officers now appointed locally, sanitary engineers, dental officers, and certain highly specialized scientific personnel. Under such method of appointment this personnel would be subject to like conditions of service as are the regular commissioned medical officers.

This is highly important from the standpoint of efficiency, especially as related to mobility in the conduct of investigations, the meeting of epidemic and other emergencies, and the manning of isolated stations. If such authority were granted, the total personnel would not be much greater. Under present conditions at isolated stations the work is routine, and if long persisted in unfits an officer for higher professional duties. These positions should be filled by regular officers subject to changes of station in order that their efficiency shall be maintained. As affects Federal health administration there is no greater legislative need. An increased corps of regular officers would also permit of more intensive specialization. In the round of duties which officers are called upon to perform, there is now opportunity for the training of only a few officers in highly specialized fields of research and medical practice.

With the present limited number of officers the occurrence of epidemics and serious disasters causes undue strain that is at times difficult or impracticable to meet. Near the close of the fiscal year a serious emergency, arising out of the floods in the Mississippi Valley, necessitated the detail of medical officers and sanitary engineers to cooperate with State and local health authorities to prevent the spread of epidemic diseases. Nineteen medical officers and four sanitary engineers were ordered to the States of Louisiana, Arkansas, Missouri, Mississippi, Tennessee, and Kentucky, following the recession of the floods. The work performed by these officers in this area is set forth in another portion of this report.

Provision should be made for the payment of actual and necessary traveling and subsistence expenses, or per diem in lieu of the latter, to officers detailed to the field for temporary emergency work. Under the present laws, mileage is allowed commissioned officers traveling under orders away from their permanent stations, except in cases of "repeated travel"—that is, where the same travel route is covered at least twice. In case of an officer sent to the field on epidemic duty, he may receive mileage from his permanent station to a temporary headquarters, from which latter point the travel performed is negligible. His subsistence while on such duty comes out of his personal funds. All of the officers detailed to the flooded area have experienced this difficulty, which becomes a very real one when the officer maintains a home and family at his permanent station. It is believed that the traveling expenses allowed other officers of the Government should apply whenever medical officers are detailed to duty of this character.

During the last session of the Sixty-ninth Congress, on February 24 and 25, 1927, hearings were held before a subcommittee of the Committee on Interstate and Foreign Commerce, House of Representatives, on the bill H. R. 10125, a bill "To provide for the coordination of the public-health activities of the Government, and for other purposes." The bill, in general terms, provided for a grant of authority to the President to transfer, by Executive order, to the Public Health Service all or any part of any executive agency (other than an agency of the military or naval forces, the War Department, the Navy Department, or the United States Veterans' Bureau) engaged in carrying on a public-health activity, whenever he finds that it will promote greater efficiency in the conduct of Federal health work. It also provided for details of officers of the Public Health Service to other executive agencies, upon request of the heads of departments or independent establishments; for the extension of research through close cooperation with educational and research institutions by an enlarged hygienic laboratory; and for the coordination of research of public-health officials and scientific workers. Provisions were also contained for unification of terms of appointment of personnel, with compensation and tenure assured to scientific and professional workers adequate to attract to the service men and women of proved qualifications; and for the enlargement of the present advisory board for the hygienic laboratory into a national advisory health council.

With certain modifications in the bill as originally introduced, the measure had the approval of the Secretary of the Treasury and the Director of the Bureau of the Budget. It was also indorsed by the American Chemical Society, the American Society of Civil Engineers, the American Medical Association, the American Public Health Association, the American Dental Association, and other national organizations, as well as numerous authorities in medicine, public health work, and sanitary engineering throughout the country.

It is believed that the enactment of a measure similar in its provisions to this bill would prove a long step forward in public-health work in the United States, and would provide a trained personnel adequate to undertake effectively the elimination of duplication in the nation-wide effort to improve the health of the population.

RECOMMENDATIONS

The state of health of the Nation has a profound bearing on economic, social, and political advancement. It is pertinent, therefore, to recommend additional means necessary not only to guard against the spread of diseases but to determine their underlying causes. The saving of life and the reduction of disability that have been effected in recent years are attributable almost wholly to the extension of our knowledge. It is through this means that further advances may be expected. Problems of health, however, are becoming increasingly complex and their solution will require greater specialization and coordinated effort on the part of health authorities. Recommendations regarding the more urgent needs are respectfully submitted:

SCIENTIFIC RESEARCH

The results of scientific research work in public health have shown conclusively that it is a good investment. The sums appropriated for this purpose as relates to the health of man are inadequate, however, when compared with those expended for the protection of property rights, including the health of living property. A larger proportion of money and effort should be devoted to researches which will enable the owner to improve health, the better to develop and enjoy this property. A reasonable increase of financial support of this work such as could be efficiently undertaken by existing agencies is strongly recommended.

In order further to promote efficiency in public health research, provision should be made in law for the coordination of this activity in government and such rearrangement of administration or organization as may be necessary to be carried on. Bill H. R. 10125, pending before the last Congress, embodies principles to this end. The enactment of these principles into law is urgently recommended.

FOREIGN QUARANTINE

On account of the isolated location of the United States quarantine at New Orleans, La., and the consequent inconvenience to commerce, a site for a new station nearer the city of New Orleans was acquired last year. In the meantime the existing station was damaged by a hurricane, which further emphasizes the need of improving quarantine facilities at this port. It is respectfully recommended that funds be appropriated for the erection of a station on the new site at as early a time as practicable.

Notwithstanding the great growth of commerce and development brought about by the oil and other industries in the Lake Sabine district, adequate quarantine facilities have not been provided for this port. The commerce of the port is rapidly increasing and is in communication with many foreign ports, some of which are potential dangers from the public health standpoint. Adequate quarantine facilities are accordingly imperative and it is respectfully recommended that funds be made available for the building and equipment of an efficient quarantine station at this port.

The floating equipment for use in connection with quarantine activities is in urgent need of additions and repairs. Of a total of 70 vessels engaged in quarantine work, 20 per cent are actually laid up as unserviceable or in an unserviceable condition now justifying condemnation. This condition should be improved by a replacement program extending over a three-year period. The quarantine service requires heavily constructed tug-boat style of vessels for boarding duty. These should be constructed from plans specially prepared comprehending the work required and taking advantage of modern economies in motor-power equipment. In order to replace this floating equipment, appropriations of approximately $100,000 per year will be necessary for a period of three years. Based on exact needs, estimates will be accordingly submitted from time to time.

MAINTENANCE AND CONSTRUCTION OF HOSPITALS

In the last three annual reports mention has been made of the increased needs in order to maintain modern hospitals in a proper state of efficiency and recommendations were submitted accordingly. I desire to repeat these recommendations. In the recent past, new activities in relation to the care and treatment of beneficiaries have been imposed by law. It is necessary that the appropriations be enlarged commensurate with these increased duties.

Modern hospitals are needed at Galveston, Tex, and Seattle, Wash. Replacement of delapidated frame structures with modern hospital buildings of larger capacity are required at New Orleans, La., San

Francisco, Calif., Stapleton, N. Y., and Baltimore, Md. New construction to supply quarters for personnel and increase the capacity of modern hospitals is required at Buffalo, N. Y., Pittsburgh, Pa., Louisville, Ky., Mobile, Ala., Fort Stanton N. Mex., Portland, Me., and at the National Leper Home, Carville, La.

SANITATION OF FLOODED AREAS IN THE MISSISSIPPI VALLEY

It is considered essential that the work which has been undertaken by the Public Health Service in connection with the prevention of epidemic diseases in the flooded area of the Mississippi Valley be carried to completion. In order to do so in cooperation with State, local, and other agencies, as arranged immediately after the emergency arose, additional funds will be required. Estimates for appropriations during the current fiscal year, as necessary, as well as the next fiscal year, will be submitted. Favorable action is respectfully recommended on these estimates.

COLLECTION OF SICKNESS REPORTS

By the terms of international sanitary treaties the Public Health Service is under obligations to collect and transmit data regarding the prevalence of communicable diseases. Existing laws require also that these data shall be collected, published, and disseminated for the information of State and local health authorities throughout the United States. The bulk of the expense of collection is borne by the respective States. The proper analysis of these data, however, is not now practicable on account of lack of facilities, and the extent of their collection is not nation-wide. It is respectfully recommended, therefore, that a limited appropriation be granted for the establishment of a morbidity registration area for the complete collection of sickness reports in cooperation with State and local authorities and for the analysis of the data thus collected. The cost would be negligible but the information obtained would be of the greatest value to health authorities and specialists in public-health research.

CONTROL OF VENEREAL DISEASES

Notwithstanding the undermining effects of venereal diseases on health and the deep interest of the public recently manifested regarding measures for their study and prevention, the amount of funds for this purpose has been reduced. Important problems await systematic study; their solution would effect important economics in governmental expenditures brought about by reason of these diseases. It is earnestly recommended that adequate appropriations be made available for studies of venereal diseases in the laboratory and in the field.

PERSONNEL

The need of additional medical officers in the regular commissioned corps, and provision in law for a commissioned status for sanitary engineers, dental officers, and professional and scientific personnel with important responsibility and subject to changes of station, was set forth in the annual report for 1926. Mention is also made of this need in the body of this report in connection with the bill H. R. 10125, considered by the subcommittee of the Committee on Interstate and Foreign Commerce, House of Representatives, during the last session of Congress. With minor changes, the bill received the approval of the Secretary of the Treasury.

This bill provides for the coordination of public health activities, such rearrangement of organization as may be necessary to bring it about, and the unification of the status of professional and scientific personnel performing the work. The hearings held before the subcommittee on this measure indicated the widespread interest in legislation to coordinate Federal public health activities. The opinion was general on the part of representative medical, public health, and sanitary engineering organizations, universities, and life insurance companies, that the coordination of Federal public health work, through an enlarged and better equipped public health service, would tend to eliminate duplication of effort in administration, in research, and in educational measures. It is therefore recommended that legislation embodying principles similar to those contained in H. R. 10125 of the Sixty-ninth Congress be enacted into law during the next Congress.

H. S. CUMMING,
Surgeon General.

Hon. A. W. MELLON,
Secretary of the Treasury.

DIVISION OF SCIENTIFIC RESEARCH

In charge of Asst. Surg. Gen. A. M. Stimson

The past year has not only witnessed very sound progress in the scientific investigations of this division, but some striking illustrations of the utility of these studies of public health problems have prominently come to attention. For example, the malaria studies which have now been continued for a number of years have placed facts at the disposal of health officials which are enabling them to cope successfully and economically with the impending menace of malaria in the inundated regions of the Mississippi Valley, a menace which, if it had not been checked, would have enormously increased the sufferings of the stricken populations and delayed the rehabilitation program. In the same connection the accurate knowledge of pellagra, gained by the systematic investigations of this division, has provided the means for combating a considerable prevalence of this disease in the flooded areas, determined by the occurrence of the disaster following upon several successive seasons of unfavorable local economic conditions. So again, the studies of stream pollution have borne fruit in the services which it has been possible to render in the solution of two large problems involving interstate health interests, and the researches in spotted fever have had the incidental effect of protecting many persons against infection during their progress.

The ultimate aim of the researches of this division is to produce results of practical value such as are illustrated in the foregoing paragraph, but it must be realized that in order to endow these results with the qualities of permanence and economy, it is essential that the studies be as far as possible fundamental, rather than mere casual inquiries destined to produce at best only temporary and costly expedients. Such a program involves laborious and time-consuming studies of various branches of the sciences of physics, chemistry, biology, and mathematics, the significance of which may not at first be clear, but the ultimate benefits of which are far reaching.

It is, therefore, the continued policy of this division to conduct basic scientific studies as a groundwork upon which it may then erect a structure of sound practical public health practice.

The following detailed reports of the several activities of this division prepared for the most part by the officers in charge of them will afford many further illustrations of the operations of this policy:

Cancer

Cancer studies were continued under the direction of Surg. J. W. Schereschewsky, with headquarters in the Harvard Medical School, Boston, Mass. The medical officer in charge was detailed to temporary duty in charge of the quarantine station at Gallops Island, Mass., and shortly after his release from that duty leave of absence, due to illness, was granted, continuing through to the end of the fiscal year. Due to these circumstances but little work was performed, apart from the routine clerical work and the compilation of the literature on malignant diseases.

Effects upon living cells of electrical currents of very high frequency.—In the annual report for the preceding fiscal year reference was made to studies of the effects of oscillating currents of very high frequency on the growth of malignant tumor cells. This study was resumed upon the return of the medical officer in charge from duty at the quarantine station. Mice inoculated with a very malignant sarcoma obtained from Doctor Strong, of the Bussey Institute, were the subjects of the investigation. This malignant growth showed takes in about 80 per cent of all animals of the strain in this laboratory and rapidly grew to very large dimensions, causing death of the animal in about four weeks. Using a frequency of about 70,000,000 cycles per second and applying this frequency to the growths through the medium of plates of copper covered with insulation held in opposite sides of the mass, the circuit being energized by being placed in inductive relation with the oscillator, it was possible in several instances to secure apparent recession and absorption of the growth, employing currents of about 180 to 200 milliamperes, as indicated by a thermomilliammeter included in the auxiliary circuit. It was found, however, that extreme care had to be employed in applying these currents to laboratory animals, as even in this very limited form of exposure, in which only the tumor tissue was included in the electrical circuit, sudden deaths during the treatment of the animals were not uncommon, and many of the animals were found dead the day after treatment. In view, however, of some encouraging results, it has seemed best to continue this line of investigation during the next fiscal year.

Clonorchiasis

The studies of clonorchiasis have been much curtailed, owing chiefly to the lack of sufficient material. These studies, carried on for a number of years, have only a negative value. It has been impossible to infect the American species of intermediate hosts with the worm and to carry it through its extrinsic life cycle. The value of such experiments is only that of negative evidence, and one proved instance of transmission under American conditions would reduce it to zero. However, up to the present time no such instance is known to have occurred.

Goiter

The activities of the office of goiter studies have continued under the direction of Surg. Robert Olesen, with headquarters in Cincinnati, Ohio.

Endemic goiter in Oregon.—Available data indicate that endemic goiter prevails to a greater extent in Oregon and Washington than in any other sections of the United States. In order to ascertain the distribution of goiter in Oregon, a systematic survey was undertaken at the request of the State health officer and several physicians interested in the subject. Approximately 18,000 school children, residing in 33 of the largest cities and towns, were examined. During the survey it was apparent that there were marked variations in incidence in different sections of the State. Most surprising was the discovery of considerable goiter along the seacoast. The records were being tabulated and studied at the end of the fiscal year.

Endemic goiter in Massachusetts.[1]—The thyroid survey in Massachusetts included 7,140 boys and 10,057 girls attending high schools and upper grades of grammar schools in 57 localities. Eight and seven-tenths per cent of the boys and 22 per cent of the girls examined had some degree of thyroid enlargement, generally slight. Goiter is least prevalent in the eastern portion of Massachusetts, while in the central and western portions it is present to a relatively greater, though not undue, extent. The prevention of endemic goiter is not a pressing problem in Massachusetts, the need for special action being limited to individuals in a few localities.

Endemic goiter in Connecticut.[2]—The report dealing with the thyroid survey made in Connecticut appeared during the year. General prophylaxis is deemed unnecessary in the State because of the relatively slight incidence of simple goiter. Special preventive measures, however, were recommended for the girls residing in communities having considerable thyroid disease.

Resurvey in Cincinnati.—Three years ago a survey of 47,493 children in Cincinnati disclosed a considerable incidence of simple thyroid enlargement. A resurvey of 25,640 children in 40 selected public and parochial schools during the present year showed a decided decrease in the amount of simple goiter. At the end of the year a careful analysis of the data was being made to determine the factors responsible for this decreased incidence.

Distribution of goiter in the United States.[3]—Information concerning many thyroid surveys was secured by searching the literature and corresponding with the health officers in 1,200 of the largest cities in the United States. These data parallel the goiter findings among drafted men. The epidemiological value of such information is considerable.

Effect of communicable disease upon the thyroid.—Infections and intoxications probably exert a deleterious influence upon the thyroid gland. In order to secure more accurate information upon this point, repeated examinations are being made in a group of school children. The thyroids of approximately 25,000 children were examined soon after school opened in 1926. Thereafter, thyroids were reexamined after children had recovered from the effects of communicable diseases. It is the intention to continue this investigation another year for the purpose of increasing the volume of observations.

Past communicable diseases and present thyroid status.—Information as to the communicable diseases from which 20,000 children had suffered in the past was obtained by means of a special record form. These data are being correlated with the present thyroid status in an effort to learn the effects upon the gland of certain infectious diseases.

Endemic goiter and physical exercise.—It has been alleged by some observers that simple goiter results from the fatigue occasioned by physical education in the schools. For the purpose of gaining information on this point, the thyroids of approximately 7,000 high-school students were examined. Members of athletic squads were examined before and after periods of exceptional activity. At the close of the year the information obtained was being examined.

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[1] Public Health Reports, Mar. 25, 1927. (Reprint No. 1148.)
[2] Public Health Reports, Aug. 13, 1926. (Reprint No. 1102.)
[3] Public Health Reports, Nov. 26, 1926. (Reprint No. 1125.)

Yearly thyroid records of same individuals.—In order to determine, if possible, the reasons for the changes in the thyroid glands of school children, yearly records are being kept of a large number of children. While it is difficult to follow a considerable number of individuals over a term of years in a large city, it is felt that the information obtained will justify the effort involved.

Goiter and foci of infection in Connecticut.[4]—Examinations of 5,797 boys and 6,608 girls in 28 localities in Connecticut showed that decayed teeth and diseased tonsils were more frequently associated with thyroid enlargement than with normal thyroids. These findings apparently conflict with the results of a similar study made in Cincinnati. It is conjectured that simple goiter in Cincinnati is due to an iodine deficiency, foci of infection being overshadowed as etiological factors, while in Connecticut, on the other hand, simple goiter is sporadic in occurrence, being due largely to causes other than a deficiency of iodine.

Goiter and physical development.[5]—An article dealing with the possible relationship between enlarged thyroids and physical growth was issued during the year. Ten uniform measurements of 1,341 white boys and 1,576 white girls in eight public schools in Cincinnati showed a slight physical superiority among thyroid-normal individuals.

Goiter and school attendance.[6]—A detailed study of 603 boys and 620 girls in 11 Cincinnati schools showed a slightly better average school attendance among children with some degree of thyroid enlargement. In the selected group that was studied, the various mental and physical ailments from which children with endemic goiter are alleged to suffer were not reflected in school attendance.

Iodized drinking water.[7]—Because of the apparent ease with which wholesale goiter prophylaxis may be practiced by iodizing public water supplies, much attention has been attracted to this method. A careful study of the measure indicates its theoretical correctness, low cost, and widespread applicability. However, until the procedure is proved to be both efficient and harmless, its adoption can not be recommended.

Conference with Tennessee health officials.—At the request of the State health officer of Tennessee, the service representative conferred with members of his staff for the purpose of formulating a policy for dealing with endemic goiter in that State, and a line of procedure was outlined by means of conferences, lectures, and demonstrations.

Goiter references.—The abstracting and indexing of current goiter literature has been continued. At the request of numerous correspondents, a bibliography of recent goiter literature was made and extensively distributed.

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[4] Public Health Reports, Mar. 4, 1927. (Reprint No. 1143.)
[5] Public Health Reports, Sept. 3, 1926. (Reprint No. 1108.)
[6] Public Health Reports, Oct. 20, 1926. (Reprint No. 1119.)
[7] Public Health Reports, May 20, 1927. (Reprint No. 1158.)

Annual goiter questionnaire.—Following a practice inaugurated two years ago, another questionnaire was sent to the health officers of all cities in the United States having a population in excess of 10,000. Information was sought concerning the feasibility of iodizing public water supplies for the prevention of simple goiter and the extent to which this procedure is practiced. A special request was made for reports of recent thyroid surveys. Approximately 60 per cent of the health officers addressed submitted helpful replies to the questions.

INFLUENZA

The office of influenza investigations continued under the direction of Surg. J. G. Townsend until he was relieved from duty on December 31, 1926. He was assisted by a board composed of Surg. W. H. Frost, chairman, with himself as member, and Statistician Edgar Sydenstricker as recorder. When Surgeon Townsend was transferred, Statistician Sydenstricker was placed in temporary charge.

As during the preceding year, the work of the office was devoted to the editing, coding, and tabulation of the large mass of data collected prior to July 1, 1925, from approximately 14,000 college students, and of records of respiratory attacks collected from families of medical officers of the United States Army, Navy, and Public Health Service, and members of the faculties of certain medical schools. The basic tables for all this material have been practically completed.

During the year a second progress report was published, "Epidemiological study of minor respiratory diseases," which was based on the records from families. Certain phases of the study of these records were referred to in the previous annual report of this office, but among the additional indications afforded by this interesting collection of data relating to respiratory attacks in families, where practically every case was reported and described by a medically trained person, the following may be mentioned:

1. A comparison of the frequencies of certain localized symptoms in cases classified as "colds," "bronchitis," and "sore throat," showed that the differences were found to be what the class designations implied. Thus, in colds the predominant local symptoms were "running of the nose" and "obstruction of the nostrils"; in bronchitis the predominant symptom was "cough"; and in sore throat, tonsillitis, and pharyngitis the symptom "sore throat" was most frequently recorded. While the groups were not exclusive as regards these localizing symptoms they were quite distinct, at least when they were considered as groups.

2. As regards the symptoms indicative of a general constitutional disturbance—chiefly fever, pain in head of body, constipation—these were least common in "colds," somewhat more common in "bronchitis," and still more so in cases of "sore throat." Even in common colds, however, fever was recorded in about 20 per cent of the cases.

3. The symptomatology of the cases reported as "influenza" or "grippe" is of especial interest, because the record form itself did not specify any distinctive symptomatic basis for this diagnosis, but left it entirely to the reporter to put into this class the cases con

forming to his own conception of a clinical picture sufficiently distinctive to justify the diagnosis of influenza. In view of the fact that there was no pandemic of influenza in the period for which these records were obtained, it can not be assumed that the diagnosis of " influenza " or " grippe " necessarily implied the patient's belief that the disease is etiologically identical with pandemic influenza.

It was clearly shown that the cases recorded as "influenza" or "grippe" were characterized by a more widespread inflammation of the respiratory tract than the cases classified in the other groups. The cases reported as "influenza" are, it appears, to be considered not as an etiological but merely as a clinical group; as a clinical group, however, they seem to be sufficiently distinct to warrant their separation from the other groups made in this classification, and to bear sufficient resemblance to cases of pandemic influenza to warrant their designation as influenza from a clinical point of view. In this connection a comparison of the frequencies of 13 symptoms in cases of colds where there was a more or less general inflammation of the respiratory tract (i. e., cases of colds for which a diagnosis of bronchitis or sore throat was also given) with those in cases diagnosed as influenza or grippe, and with those in cases of epidemic influenza occurring in 1920 will be of interest.

TABLE 1.—*Comparison of the frequencies of 13 symptoms in cases of colds (for which a diagnosis of bronchitis or sore throat was also given) with those in cases diagnosed as influenza or grippe*

Symptom	Per cent of cases in which specified symptoms were recorded		
	1,665 cases of "cold" with complications [1]	599 cases of influenza (1924)	369 cases of epidemic influenza (1920)
Local:			
Inflammation of eyes	13	18	----------
Running of nose	82	57	[2] 60
Obstruction of nostrils	57	39	
Cough	69	55	76
Expectoration	38	26	49
Tightness of chest	23	26	[3] 32
Sore throat	42	40	36
General:			
Sudden onset	48	60	----------
Chill or chilliness	7	26	[4] 58
Fever	29	76	----------
Pains in body or limbs	26	70	[5] 49
Headache	30	59	68
Constipation	15	28	(6)

[1] Cases reported as "cold" with bronchitis or sore throat or both.
[2] Recorded as "coryza."
[3] Recorded as "pain in chest."
[4] Recorded as "chilliness."
[5] Recorded as "pain in limbs," same frequency (49 per cent) recorded for "backache."
[6] Nausea recorded in 38 per cent and vomiting in 34 per cent of cases.

Especial attention was given during the past year to an analysis of the incidence rates for minor respiratory diseases among college students. The records of 2,000 individual students were subjected to more detailed analysis than was possible for the entire number, these students being in colleges at Boston, Washington, Columbus, Chicago, Berkeley, and New Orleans. The annual incidence rate for the 52-week period beginning June 8, 1924, for total respiratory attacks, as well as of six diagnostic groups, is shown in Table 2.

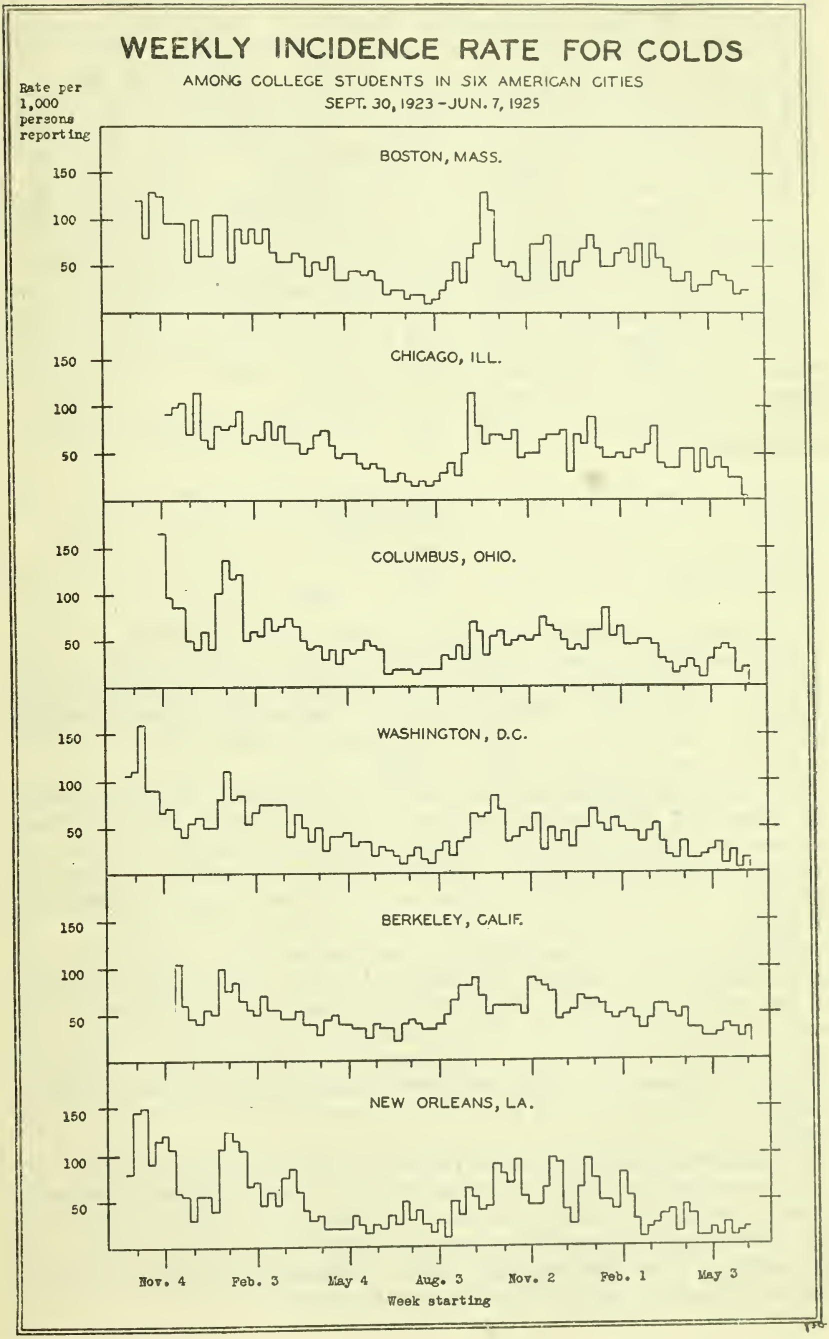
TABLE 2.—*Yearly incidence rate for minor respiratory diseases among students in six large cities June 8, 1924–June 6, 1925, inclusive*

City	Incidence rate per 1,000						
	Total minor respiratory	Colds	Bronchitis	Influenza	Sore throat	Hay fever	Pneumonia
Washington	2, 400	1, 969	168. 4	102. 8	120. 3	39. 38	----------
Columbus	2, 631	2, 094	155. 7	160. 5	174. 1	39. 64	6. 770
Berkeley	3, 154	2, 632	154. 6	170. 9	153. 3	40. 85	1. 888
Boston	3, 395	2, 672	159. 1	268. 9	234. 8	58. 70	1. 893
Chicago	3, 048	2, 512	109. 1	190. 0	167. 7	66. 70	2. 023
New Orleans	2, 788	2, 229	127. 8	277. 9	102. 2	51. 11	----------
All cities	2, 945	2, 400	149. 8	182. 9	162. 5	46. 22	2. 714

The interesting fact appears that the incidence of respiratory attacks did not vary greatly according to geographic location. The rate for Chicago was 3,048 per 1,000, as compared with 2,788 for New Orleans, and 3,395 for Boston, as compared with 3,154 for Berkeley, Calif. A somewhat higher incidence of sore throat was indicated for Chicago, Boston, and Columbus, but the rate for Chicago was not greatly in excess of that for Berkeley. The bronchitis rate was lowest in Chicago. It was interesting to find that in two widely separate localities a definite epidemic of " influenza or grippe " took place during the year.

When the cases of respiratory diseases in these six localities were considered chronologically, it appeared that while there was a generally similar seasonal variation and some evidence of synchronism in the major occurrence of peaks in prevalence, the variations in general from a seasonal curve were not synchronous but were local. The weekly variations are shown in the accompanying diagram, based on records for the entire number of students cooperating in these localities.

A report is in preparation on a more detailed study of the student records and will be presented during the coming year. The student records are also being further analyzed from the point of view of the incidence of respiratory attacks of different kinds among persons classified according to dietary and physical habits. The family records secured through the cooperation of Army, Navy, and Public Health Service officers will also be reported upon for the entire period from the latter part of 1923 to July 1, 1926. These records are also being studied from the point of view of familial contact, interval between cases, and for other purposes, from the points of view of differences in sex, age, and season. It is planned to issue reports from time to time on special phases of the subject of respiratory diseases in general and of interepidemic influenza in particular based on this and other material which has been collected during the past few years.



WEEKLY INCIDENCE RATE FOR COLDS

AMONG COLLEGE STUDENTS IN SIX AMERICAN CITIES

SEPT. 30, 1923 - JUN. 7, 1925

Leprosy Investigation Station

Surg. M. H. Neill continued as director of the leprosy investigation station. Headquarters for clinical and laboratory studies were maintained near the Kalihi Leper Hospital, Honolulu, while the manufacture of chaulmoogra derivatives was carried on at the University of Hawaii by service employees. The services of the chemical department of the university were made available for consultation.

Statistical studies.—There were 159 patients in the hospital July 1, 1926. During the year 66 patients were admitted, 25 were paroled, 1 died, 39 were transferred to Molokai, and 3 left the hospital for the Orient. The number of patients in the hospital at the close of the year was 157. Fourteen of the cases admitted during the year were returned parolers. The number of admissions was much lower than the average for the preceding five years—94.6. As in previous years, the proportion of early cases admitted was, unfortunately, not large and shows no indication of increasing.

For the fiscal year 1926–27 the racial distribution of admissions was as follows:

Hawaiian	19	Japanese-Hawaiian	1
Portuguese	10	Chinese	1
Filipino	10	Korean	1
Japanese	10	German	2
Part Hawaiian	8		
Chinese-Hawaiian	4	Total	66

Forty-three of the admissions were males and 23 females.

In 12 of the 25 persons paroled during the year the leprosy bacillus had never been detected. Their average stay in the hospital was one year and one month. The remaining 13 cases were bacteriologically positive. The average length of segregation before parole of these cases was two years and three months.

The same minimum requirements for parole have obtained during the past year as have been in operation since 1921, namely, that a patient must have shown the absence of leprosy bacilli for three successive examinations at three months' intervals and have shown no clinical activity during the same period before being considered for parole.

Studies have been made of all lepers admitted to Kalihi Hospital from January 1, 1921, to December 31, 1925, with special reference to the subject of parole. The studies are based on information available up to December 31, 1926. During the five years in question there were 486 admissions, of whom 143, or 29.42 per cent, were paroled; 246, or 50.62 per cent, were transferred to Molokai; 22, or 4.53 per cent, died; and 75, or 15.43 per cent, remained in segregation.

In analyzing the factors important in determining parole, it appears that 88, or 70.97 per cent, of 124 bacteriologically negative cases on admission were paroled. On the other hand, but 55 of the 361 bacteriologically positive cases on admission were paroled (15.23 per cent). Thus the demonstration of Hansen's bacillus at entrance weighed heavily against the chance of parole.

Of 70 lepers classed on admission as early cases, 45, or 64.29 per cent, were paroled. Of 212 moderately advanced cases 82, or 38.68 per cent, were paroled and of 204 advanced cases 16, or 7.84 per cent, were paroled. The importance of early segregation on the chances for parole is obvious.

About double the percentage of neural cases were paroled as compared with the nodular cases. Race, sex, or age seem to have had little effect in determining parole.

Twenty-eight, or 19.58 per cent, of the 143 lepers paroled have been returned to segregation.

Seventeen, or 30.91 per cent, of the 55 paroled lepers who were bacteriologically positive at entrance have been returned to segregation, as compared with 11, or 12.50 per cent, out of 88 who were bacteriologically negative at entrance. Of 34 nodular cases paroled, 14, or 41.18 per cent, have been returned to segregation, and of 94 neural cases paroled, 11, or 10.64 per cent, have been returned to segregation.

Clinical studies.—The mixed ethyl esters of chaulmoogra oil to which one-half of 1 per cent iodine had been added previous to sterilization by autoclave has been continued as routine treatment. The injections were given intramuscularly into the buttocks. Special effort has been made to vary the dose given to different individuals so that as much of the drug as possible might be given without producing severe reaction. As a rule, it was found that if the weekly dosage was raised to more than 4 to 6 cubic centimeters general reactions were common. Local irritation has been negligible in the routine work. The majority of cases have shown improvement in the appearance of their leprous skin lesions during their stay in the hospital, during which time they received the ethyl esters. In many of the cases the disease appears to be at a standstill, or, in other words, the "carrier" stage is reached.

Reports of short-cut methods for the manufacture of the ethyl esters of chaulmoogra oil have come to our attention. One omits the high vacuum distillation of the esters but is otherwise similar to the methods employed at this station. Esters were made by this suggested method and used for a month after the addition of iodine and sterilization by steam under pressure as in the routine procedure. The use of these esters, amounting to about 400 injections, produced many painful local reactions and three abscesses occurred, the first to be observed at this clinic for more than three years. Nothing in this experiment indicates that changes should be made in our routine technique for making the ethyl esters.

Another experiment was undertaken using hydnocarpus oil from *Hydnocarpus anthelmintica* as a substitute for chaulmoogra oil from *Teraktogenos kurzii* in the manufacture of the ethyl esters. Care was taken to maintain the routine manufacturing process. The hydnocarpus esters were substituted for the chaulmoogra esters for nearly all patients for two months, about 800 injections being given. The hydnocarpus injections caused no more local irritation than is usual with chaulmoogra esters. The time was too short to form a judgment on the therapeutic efficiency of the hydnocarpus esters, but no definite ill effects were thought to follow its use, and a number of cases which had been improving under the chaulmoogra ester treatment continued to do so when treated with the hydnocarpus esters. Chemical tests show a similar iodine value and rotation of polarized light for chaulmoogra and hydnocarpus oils, and for several years hydnocarpus oils have been used extensively in the Orient for the manufacture of the ethyl esters. Hydnocarpus oil can be obtained fresh and is cheaper than chaulmoogra oil. It is believed that it is equally suitable for the manufacture of compounds for the treatment of leprosy.

With the increasing use of hydnocarpus oils as substitutes for chaulmoogra oil in the treatment of leprosy, it was found that hydnocarpus oil could be injected intramuscularly without causing the intense pain which occurred when chaulmoogra oil was used in this way. Thirteen lepers were treated with *H. anthelmintica* oil and ten lepers were treated with *H. wightiana* oil. High-grade specimens of these oils were obtained from Japan and India. One-fourth of 1 per cent of iodine was added previous to autoclaving and the injections were made as for the ethyl esters. No local reactions followed these injections, even when the standard dose of 6 c. c. was given repeatedly. Lighting up of skin lesions with fever occurred in about the same proportion of cases as is observed under the ethyl ester treatment.

The therapeutic properties of these two classes of remedies appeared to be very similar, marked improvement occurring in some cases with both treatments, while failure to improve was noted in other persons, as is the general experience with leprosy.

During the year, 225 patients received a total of 6,252 intramuscular injections of chaulmoogra or hydnocarpus compounds; also 295 paroled patients received 3,031 injections of ethyl esters at Kalihi Hospital or by Territorial physicians on other islands.

Nine patients were treated with 14 weekly injections each of tryparsamide, intramuscularly. The drug appeared to be inert so far as its effect on leprosy was concerned.

An effort has been made to induce the patients to take advantage of the climatic conditions prevalent in Hawaii and subject themselves to a regular course of sun baths. Many have done this and it is believed that in some examples of the maculo-anesthetic type of leprosy the evolution of skin lesions has been hastened. In nodular cases little or no improvement has been noted.

Bacteriological studies.—A large amount of work has been done in an attempt to cultivate bacteria from leprous tissue. The results justify no statement at present. Studies in the bacteriostatic properties of different chaulmoogra compounds, with special reference to acid-fast bacilli, have also been conducted.

Chemical studies.—Research work on chaulmoogra compounds has been actively conducted during the year. The preparation of chaulmoogryl alcohol begun in the preceding year was completed. Especial attention was given to the preparation of substances derived from chaulmoogra or hydnocarpus oil in studying the peculiar bacteriostatic property of these substances on acid-fast organisms. In addition to the sodium salts of the mixed fatty acids, unsaturated acids with optical activity, dihydrochaulmoogric acid, a saturated acid, without optical activity, and alpha and beta dihydroxydihydrochaulmoogric acids, which are saturated acids with optical activity, were prepared.

MALARIA

The field investigations of malaria were continued under the direction of Surg. L. D. Fricks with headquarters at Memphis, Tenn., until March 18, 1927, when he was relieved from duty and Surg. L. L. Williams, jr., was placed in charge, with headquarters at Richmond, Va.

The investigations during the past year were divided into five main divisions, namely, rural malaria control, impounded waters, drainage, field laboratory investigations, and the use of airplanes in the control of *Anopheles* breeding. The major objective has been the devising of more effective means of malaria control and more economical methods of operation. This year has brought some measure of success.

Rural malaria control studies.—Since 1919 there have been developed in the southern malarious States numerous county health departments for the primary purpose of controlling malaria. The induction of county health work, with a broad, well-balanced public-health program, within a malaria county, has proved one of the most effective means of reducing the malaria rate. This has been so well demonstrated that the establishment of public-health units within the more malarious counties has become a part of the malaria program of the health departments of most of the Southern States.

The screening investigations have been continued and enlarged. As the anopheline mosquito bites only at night, it is obvious that the best protection for the individual is nighttime protection. The great drawback to universal screening, particularly among the laboring class of the cotton-field areas, has been the prevailing belief that the poorer types of tenant houses are so loosely constructed as to make screening impracticable or impossible. Two years ago studies were commenced to determine whether or not this was the case. The early work was so successful that it was thought wise to continue and enlarge these studies this year.

Five hundred additional houses in Leflore County, Miss., have been screened at a remarkably low cost per house. The effect of this work on the malaria rate among the tenants of these houses and on the anopheline infestation rate of these houses as compared with similar rates for houses unprotected by screens in the same area will form an essential part of the continuation of these studies.

It is of great interest to note that as the recent great flood of the Mississippi River has receded, leaving in its wake an enormously important rehabilitation problem, this screening study has been the deciding factor in determining the type of malaria relief to be carried out in the recently flooded area. The only practicable scheme of widespread malaria control over a large area in times of emergency must be screening. Except for the study described above, it would have been thought impossible to use this method of control in large-scale relief work effectively and at a sufficiently reasonable cost.

Impounded water studies.—With the increasing industrial development of Southern States, hydroelectric power assumes a place of ever-increasing importance. It is essential that the impounding of large bodies of water for hydroelectric purposes be made without bringing about a great increase in the malaria rate in the very neighborhood where most of the industrial development should take place.

The first measure of control developed by the late Asst. Surg. Gen. H. R. Carter, that is, seasonal fluctuation of the water level, is still an effective measure in controlling the production of the *Anopheles* mosquito in large and small impoundings. However, as the use of electric power has increased, many companies find the loss of water head more costly during the summer months than other forms of anopheline control. To meet these conditions, Epidemiologist T. H. D. Griffitts devised a method of applying an oil mist from a boat by means of heavy air pressure. In the two years past this method has proved so successful and so economical that a number of impounded water companies have adopted it in controlling the production of *Anopheles* mosquitoes on a rather extensive scale in a number of States throughout the South.

However, there is another phase of the economic situation which requires solution. Measures looking toward anopheline control in these impounded areas require extensive clearing operations in the basin to be flooded. Such work is extremely expensive. This clearing problem must be solved. For this purpose plans have been started for applying Paris green from an airplane on impounded waters where no clearing has taken place. Should this prove effective, it should relieve new impounded projects of the rather heavy cost of extensive clearing.

Drainage studies.—Complete drainage of breeding areas is, of course, the best solution in the problem of controlling *Anopheles* production. Studies in past years have compared the economics of hand labor and dynamite ditching; service investigators have tested and developed the use of horse and tractor-drawn ploughs for ditching purposes, and have devised and compared methods of cleaning silt from ditch bottoms and of clearing vegetation from the banks. These problems are by no means solved. In those areas where large reclamation projects have been initiated the malaria problem has become serious. It is a common practice in such projects to put in lateral ditches not more than one mile apart. Therefore, all homes in the reclaimed area must be within at least one-half mile of a ditch. The constant cleaning of silt from these ditches is a costly proposition. This problem yet awaits solution. However, investigations have been initiated to devise some means of so completely shading these ditches as to render them unfit for mosquito production.

Field laboratory investigations.—The malaria research laboratory, at Greenwood, Miss., under the direction of Special Expert M. A. Barber, and the personnel in the field, have continued studies of habits of anopheline mosquitoes. Early studies in differentiating the selective habits of the various species of *Anopheles* have resulted in great savings in many mosquito-control programs. These studies are continued in the hope and expectation that further savings will be devised.

The laboratory has continued the study of larval food.[8] Doctor Barber's discovery, made during the course of these studies, of the effectiveness of small quantities of Paris green as a larvicide, has proved one of the greatest advances in the study of economic control of *Anopheles* production.

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[8] Public Health Reports, June 3, 1927. (Reprint No. 1161.)

The laboratory workers have continued their studies of new larvicides and have tested many substances for their larvicidal power. In addition, as new proprietary larvicides come on the market, this laboratory tests them and evaluates their effectiveness.

The laboratory workers and an officer in the field have continued the studies of spleen rates and thick blood films,[9] in an effort to devise a true measure of malaria.

Airplane studies.—The use of an airplane in controlling the production of *Anopheles* mosquitoes was extensively studied at Quantico, Va., during the past year.[10] This work definitely established the fact that the airplane has a place in mosquito control work. At Quantico, Va., 800 acres with heavy mosquito breeding in otherwise inaccessible places were easily, successfully, and economically controlled by Paris green distributed from an airplane. One interesting feature of this work was the observation that Paris green filters through both wet and dry vegetation when the dust comes from above as the airplane passes over. This does not seem to be true of Paris green applied to heavily overgrown areas when distributed by hand from the ground. This feature of the work will be further investigated.

Other studies with the airplane have been commenced, namely, the feasibility of applying oil from an airplane and of applying oil mixed with Paris green. It has already been shown that an airplane can successfully distribute both of these larvicides, and this investigation will be continued.

Nutritional Diseases

The field studies in nutrition during 1927 were carried on, as for several years past, under the direction of Surg. Joseph Goldberger, at the Georgia State Sanatarium, Milledgeville, Ga., and in cooperation with the Hygienic Laboratory at Washington, D. C.

The exceptional opportunities for the study of pellagra afforded by the Georgia State Sanitarium have, with the valuable cooperation of the board of trustees, the superintendent, and other officers of the sanitarium, been utilized by the service for the study of that disease since 1914.

For the past few years these studies have increasingly concerned themselves with tests of the pellagra-preventive value of individual foods. During the fiscal year 1926 the value of tomatoes, carrots, and rutabaga turnips were studied. It was found that the earlier impression that tomatoes lacked pellagra-preventive properties was erroneous—that, when administered in sufficiently liberal quantities, canned tomatoes possess decided pellagra-preventive activity. By reason of the ready availability of tomatoes, either fresh or canned, at all seasons of the year, this finding is of great practical importance. The results with carrots and rutabaga turnips were inconclusive, but it is believed that both of these vegetables possess some, but rather feeble, pellagra-preventive activity. A detailed report on these studies was published during the year.[11]

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[9] Public Health Reports, June 24, 1927. (Reprint No. 1166.)
[10] Public Health Reports, Feb. 18, 1927. (Reprint No. 1140.)

Following the studies of tomatoes, carrots, and rutabaga turnips, a study of the pellagra-preventive value of a liberal daily allowance of cowpeas and one of wheat germ were undertaken, and though still in progress at the close of the fiscal year, indications were already quite clear that results of practical value would be obtained.

At the Hygienic Laboratory the studies concerned themselves with a continuation of the investigation of the relation of experimental black tongue of dogs and of the experimental pellagra-like condition in albino rats to human pellagra. The experimental feedings in these animals have been designed so as to test the preventive value of a number of foods, both in order to determine whether the results in these species parallel each other and also those in pellagra, and to obtain indications that might serve as a basis for preventive studies of the human disease.

The results of the laboratory studies during 1927 confirm the previous findings and strengthen the indication that both the dog and the albino rat are suitable experimental animals for the study of pellagra. Some of these results have already been helpful in advancing the study of the human disease.

The office of field studies in nutrition, in addition to its work of research, was in receipt of a considerable number of inquiries with regard to pellagra and other nutritional diseases, and investigated reports from three separate localities of increased pellagra prevalence.

ROCKY MOUNTAIN SPOTTED FEVER

Studies of Rocky Mountain spotted fever have been continued at the field station at Hamilton, Mont., under the direction of Surg. R. R. Spencer and Special Expert R. R. Parker. During the first half of the year, investigations were also conducted at the Hygienic Laboratory, Washington, D. C.

Use of the tick vaccine.—The work throughout the year has been chiefly concerned with the preparation of the prophylactic vaccine, and further tests to determine its value. Increased production has made possible the vaccination of a much larger number of individuals in exposed occupations than in 1926. The results suggest the usefulness of the vaccine in the saving of lives, and the demand for it has far exceeded the amount it has been possible to manufacture.

In the Bitterroot Valley, where the most virulent type of the disease occurs, 610 persons were vaccinated in 1926, and 1,272 in 1927. Fourteen cases, 12 fatal, occurred in the nonvaccinated group during this period. No cases have occurred in the vaccinated group, but the data concern too small a proportion of the population to be taken as trustworthy evidence of the value of the vaccine. More convincing, however, is the fact that among the vaccinated laboratory and field workers of the Public Health Service and of the State Board of Entomology, who are exposed to the same virulent type of infection, five relatively mild, nonfatal cases of Rocky Mountain spotted fever have occurred. Prior to the use of the vaccine there were five fatal cases among laboratory workers exposed to the Bitterroot strain.

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[11] Public Health Reports, May 13, 1927. (Reprint No. 1157.)

In the neighborhood of Shoshone, Idaho, among a group of 319 nonimmune sheepherders, 115 were vaccinated. There were 9 cases of spotted fever among the nonvaccinated and 2 among the vaccinated. In 1926, in this same group, there were 13 cases among the nonvaccinated (221), and no cases among the vaccinated (94).

In Natrona County, Wyo., in a group of about 300 nonimmune herders, 95 were vaccinated. There were seven cases of spotted fever among the nonvaccinated and none among the vaccinated. Five more cases occurred among persons in other occupations in the same area.

Improvements in manufacture of vaccine.—Many improvements in the technique of production of the vaccine have been made by finding (*a*) the optimum temperature and humidity for the rearing of ticks; (*b*) the most suitable hosts and best time of feeding for the various stages of the tick; (*c*) that a combination of phenol and formalin provides an efficient preservative for the insurance of sterility and, at the same time, does not perceptibly affect the potency of the product; (*d*) that adult ticks infected as adults will produce a potent vaccine, provided the vaccine is prepared following a second feeding after an interval of about two weeks or more from the first feeding at which time the ticks were infected. The vaccine has been, until recently, prepared from adults infected as larvæ, which involved a more laborious and time-consuming procedure.

Rickettsia studies.—Studies upon the rickettsia associated with Rocky Mountain spotted fever have now convincingly shown what has long been suspected, that the amount of virus in ticks bears no relation to the number of demonstrable rickettsia in such ticks. Rickettsia apparently bear a certain relation to the virus of Rocky Mountain spotted fever, perhaps not unlike that of the Negri bodies to the virus of rabies, but can not be said to represent the infectious phase of the virus.

Other phases of the work.—Other phases of the investigations have been as follows: (1) the collection of data on the distribution and spread of the disease; (2) clinical and laboratory studies of cases. These studies have produced, through the help of Surg. Charles Armstrong, of the Hygienic Laboratory, at Washington, a complement fixation test which greatly aids in the differential diagnosis of spotted fever; (3) studies of a tick-borne fever which does not produce a rash and can not be identified with either spotted fever or tularaemia; (4) experiments in chemo-therapy, and in the production of a curative serum; (5) cultivation experiments.

New laboratory.—The State of Montana is now constructing a laboratory at Hamilton, to cost $60,000. A large part of this building, which will be completed about November 1, 1927, will be offered to provide adequate space and modern equipment for the manufacture of the tick vaccine and the continuation of the investigations of the Public Health Service.

Survey of Salt Marsh Areas

The deficiency act of July 3, 1926, as passed by Congress, provided—

> For a preliminary survey of the salt marsh areas of the South Atlantic and Gulf States, to determine the exact character of the breeding places of the salt marsh mosquitoes, in order that a definite idea may be formed as to the best methods of controlling the breeding of such mosquitoes, fiscal year 1927, $25,000, to be expended by the Public Health Service in cooperation with the Bureau of Entomology of the Department of Agriculture.

In pursuance of this act, Epidemiologist T. H. D. Griffitts was placed in immediate charge of the survey of salt marsh areas and field headquarters were established at Biloxi, Miss., August 15, 1926.

Area and extent of marshes.—The salt marshes, extending more or less interruptedly along the South Atlantic and Gulf coasts, vary in width from a narrow strip to an expanse of as much as 25 miles. The marsh areas of the following States were included in this survey: Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, and Texas—a total of 5,719,276 acres of salt marsh areas (including islands) in the South Atlantic and Gulf States. Fifty-seven per cent of the total marsh areas of these States is in Louisiana. In addition to the salt marshes, there are multiple thousands of acres, adjacent to these marshes, which are more or less timbered, and at higher elevations, although swampy. Louisiana has over 100,000 acres of these swamps skirting the salt marshes. However, a study of the actual mosquito-breeding areas, or the potential breeding grounds, reveals the fact that instead of having to destroy the breeding on millions of acres the problem is reduced to tens of thousands, or small figures in the hundreds of thousands. All over the areas are marshes subjected to daily tidal action that may readily be ruled out as mosquito producers.

Surveys made.—(*a*) Reconnaissance surveys have been made from Norfolk, Va., south to Key West, Fla., and from the west coast of Florida to the Mexican border; (*b*) detail surveys have been conducted, or are now being made, in the Hampton Roads district of Virginia, on the east coast of Florida (at Vero Beach and Fort Pierce), on the entire coast of Mississippi, in several areas in Louisiana, at one point in Alabama, and in the Port Arthur section of the Texas coast. All data possible are being collected on vegetation, soils, salinity, tides, meteorological influences, and all other conditions which may have a bearing on breeding or may influence the dispersal or migratory flight of the species encountered.

Species, breeding, and flight habits.—*Aëdes sollicitans*, generally known as the "New Jersey mosquito," is found to be the great salt marsh tormentor of the South Atlantic and Gulf States. At times and in certain areas, *Aëdes taeniorhynchus* is the chief offender. This has been found particularly true on the east coast of Florida, where it is given the name of *niger*, or *portoricensis*, a distinction which seems hardly justifiable. *Taeniorhynchus* has been found to produce rather freely in parts of Florida during the winter months, but not in Mississippi and Alabama. However, *sollicitans* produces throughout the winter in the latter States. As to egg-laying, *sollicitans* will apparently oviposit on the dry marsh area over long periods, and the eggs will hatch almost immediately when covered by rain; this has been checked repeatedly. In the laboratory, *sollicitans* have deposited eggs on the surface of water in small containers. Of nonanopheline salt marsh mosquitoes, *Culex salinarius* stands third in importance as a pest. The distance of flight of this species is undoubtedly less than the other nonanophelines mentioned. Of the salt marsh anophelines, *crucians* is most widely distributed, at times in tormenting numbers. *Anopheles atropos*, a nonspotted winged *Anopheles*, concerning the habits of which little was known prior to this survey, has been encountered repeatedly during the survey. It has been proved to be a salt pool and mud breeder, and at times in certain areas in Alabama, Mississippi, and Louisiana even more vicious in its attacks than *sollicitans* or other "pestiferous" species. Within a mile, at least, of its breeding grounds it has been found to enter occupied houses. It is an intrepid biter by day and by night. Nothing of its vectorship is known, but transmission experiments are planned for the present season. While no exact check on distance flight of *Aëdes sollicitans* has been possible since the beginning of this preliminary survey, quite positive evidence, through interviews in three Mississippi coastal counties, shows a flight inland for 35 miles during the great migration in this section during the summer of 1925.

Control experiments.—In repeated experiments in the employment of Paris green mixed with moist sand, larvae of salt water *Aëdes* and *Culex* have been killed by ingesting Paris green from the sand after sinking. Methods of applying Paris green coated sand are still being investigated. In certain areas in Florida mangrove swamps constitute the main salt marsh mosquito problem. Methods of control in these swamps, which are only slightly above mean high tide, are being investigated.

Epidemiological Studies of Trachoma

Asst. Surg. A. S. Rumreich, with headquarters in Rolla, Mo., has been engaged during the past year in the collection of data in Miller County, Mo., regarding environmental factors which may affect the spread of trachoma. This study has not progressed to a point where definite statements can be made.

Administrative Health Practice

Established in 1923, in order to assist a committee of the American Public Health Association in a resurvey of municipal health activities in the large cities of the United States, the office of administrative health practice has been continued in order to prepare and publish a report covering the surveys completed during 1924. Aside from the value attached to the compilations and digest of the essential features of present-day public health administration, even a brief analysis of the current practice of municipal health agencies emphasizes the urgent need for more searching and detailed research and investigations into the methods and procedures adopted for the prevention of disease and the promotion of public health.

The report of the surveys of the 100 largest cities in the United States was published in January, 1927, as Public Health Bulletin No. 164, "Municipal health department practice for the year 1923." This report of 782 pages contains a wealth of information that will continue for some time to serve as a handbook of public health practice. In spite of the difficulties and unavoidable omissions inherent in any general survey of this character, the relatively large cost of its collection, preparation, and publication is justified by the fact that prominent health authorities have pronounced it "a most valuable contribution to public health literature," a "standard reference book of public health administrative practice," and "the most important publication that has ever been given to the health officers of the country."

This report brings out very forcibly many of the more outstanding deficiencies and inconsistencies of the health service now provided for this important group of cities, representing nearly one third of the total population of the United States. Practice has not kept pace with the growing science of public health administration, and in some instances public money is still expended for activities now recognized as futile.

Effective prevention and control of disease and the promotion of health as a public responsibility depend primarily upon the development and progressive improvement of the machinery of public health administration. The report above mentioned clearly emphasizes the need of encouraging better practice by more efficient health agencies.

Since the publication of this report, the office of administrative health practice has been engaged in a study of the resources and activities of the Maryland State Department of Health. This study was undertaken at the request of the State health officer in order to review the progress made in carrying out the recommendations submitted as the result of a sanitary survey in 1914.

A comprehensive survey of public health administration in Nashville, Tenn., was completed in October, 1926, and an exhaustive, detailed report, with recommendations for a complete reorganization of the health service, was prepared at the request of the State and local interests concerned.

At the close of the present fiscal year, a survey of health activities in the District of Columbia was nearing completion. This survey was made at the request of the Director of the United States Bureau of Efficiency and with the approval and cooperation of the District health officer. The purpose of this survey was to enable the Bureau of Efficiency to advise Congress as to the needs of the District in matters of public health.

Child Hygiene

The activities of the child hygiene office were carried on under the direction of Surg. Grover A. Kempf. These include (1) intelligence studies of negro children; (2) physical status, growth, and development of white school children; (3) daylight illumination of schools; (4) vision of school children; (5) infant mortality; (6) cooperation with other agencies; (7) miscellaneous activities.

INTELLIGENCE STUDIES OF NEGRO CHILDREN

During the early part of the year an analysis was made of the psychological data secured in the study of negro children in Atlanta, Ga., in the preceding fiscal year.[12] Psychological examinations were made in five elementary negro schools and included tests—group, individual, or both—of 3,028 children.

It is difficult to compare the intelligence of negro children with that of white children, because very rarely are separate groups of the two races found who have been subjected to the same social and educational influences. In other words, it is practically impossible to measure test performance in the two races with experience held constant. It was possible, however, to base the comparison upon norms secured from large numbers of white children in various parts of the country, and an attempt was made to eliminate such factors as seemed, *a priori*, to put the negro at a disadvantage.

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[12] Public Health Reports, Dec. 3, 1926. (Reprint No. 1127.)

The results of the study of Atlanta negro children show the following:

1. On various mental tests the negro children, except at early ages, made averages that are lower than the averages of white children.
2. The discrepancy in test scores between the races increases with age, after the sixth year, and becomes quite marked by the eleventh year.
3. Variability of performance within each of the races was found, as many investigators state, to be greater than the difference between the two. The differences between the averages are reliable, however, and are constant in direction.
4. In most instances greater variability of performance is shown among the white children than among the colored. This increases the probability of extreme cases in the former race; and since their means are generally higher, it increases the probability of superior scores. The negro group, on the other hand, tends to hang a little closer around its lower average.
5. On tests of special performance—nonverbal tests and specific parts of verbal scales—the negro children seem to do better at rote and practical tasks than at those that involve behavior which may roughly be described as discriminating, analytical, and critical.

Considerable progress has been made in coding and tabulating the large amount of physical and anthropometric data which form a part of the service studies of the health of negro children. These are intended to form the basis of a second report.

GROWTH AND DEVELOPMENT OF SCHOOL CHILDREN

The studies in health supervision, physical development, and oral hygiene in the schools of Hagerstown, Md., were continued. The particular value of this investigation lies in the fact that a part of the group of children studies has been under observation for six consecutive years, and the growth, development, and physical status of the same children have been followed from year to year.

Physical examination.—During the school year 4,084 children were examined. Of this number, 922 were primary examinations, while 3,162 were reexaminations.

These examinations show, as did those of the preceding year, a greater amount of visual defect in the older children than in the new entrants. The excess of defective vision in the older children is greater than shown in the previous report, being 11.5 this year as against 4.1 last year. When serious defects of vision alone are considered, again the greater amount is found in the older children, the excess this year (4.6) also being greater than last year (2.4).

Among the 4,084 children examined, there were found only 12 who had never been vaccinated—0.29 per cent. Five of these were new entrants.

There were found only 99 children (2.4 per cent) entirely free from physical defects.

Oral hygiene.—Certain differences in the conditions found in the mouths of the children examined during this and the previous fiscal years are shown in the following table:

	1925–26 (per cent)	1926–27 (per cent)
Carious temporary teeth	72.06	67.14
Carious permanent teeth	72.66	67.92
Missing permanent teeth	12.33	14.66
Gingivitis	12.41	12.46
Fistulae (gingival)	5.82	5.82

Though there is less caries this year there are more missing permanent teeth. The amount of gingivitis among the new entrants was about the same as last year.

Physical development.—The study in physical development consisted in a series of special measurements on a group of approximately 3,200 children from the second through the seventh grade of all the Hagerstown schools and the eighth grade in one of the schools. The children were weighed each month and standing and sitting heights (the latter by the methods of Dreyer and Hrdlička) were taken at approximately six months intervals. There were over 18,000 height measurements secured during the school year, and a series of special chest measurements was made upon the entire group. The value of a study of the same group of children increases from year to year with the growth and development of the individual members of the group, and hence this investigation is becoming increasingly valuable.

STUDIES IN INFANT MORTALITY

Fetal and neonatal death.—A critical study of the data relating to the problem of fetal and neonatal death was completed and published during the fiscal year.[13] The importance of this phase of child hygiene is so great that it was felt a study of this kind would tend to crystallize our knowledge of the subject. The conclusions reached are as follows:

1. That fetal and neonatal mortality is the greatest problem in infant mortality. No other field of public-health work requires more intensive study.
2. That early infant mortality varies with racial stock for reasons as yet unknown.
3. That syphilis is the only cause of which we have sufficient knowledge to hope for complete success in prevention.
4. That the paramount importance of birth injury emphasizes the fact that we must learn how to reduce the occasions for interference with natural birth.
5. That infections in the newborn should be made the subject of special study.

Infant mortality in urban and rural sections of the United States.—A study was made of the statistics of infant mortality in nine cities of the United States, and in urban and rural sections of the registration area. In infants under 1 week of age relatively little difference was seen in the rates in the nine cities. From 1 week to 1 month there is more variation, but most of the large differences in the infant mortality rates of these cities are in the rates over 1 month of age. The geographical position, climatic conditions, racial stock, industrial conditions, and many other important factors are widely different for those nine cities, and yet the infant mortality under 1 month of age remains relatively constant. Evidently such measures as are at present taken to save infant lives have had little effect on deaths under 1 week of age. It was seen, similarly, that death from causes associated with early infancy showed little variation in the nine cities. In the first week of life the rate is higher in the cities; from 1 week to the end of the first month, it is lower in urban areas; from the second month to the end of the first year, it is higher in urban than in rural areas.

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[13] Public Health Reports, Mar. 18, 1927. (Reprint No. 1146.)

These studies in infant mortality show the urgent need of research into the cause of fetal and neonatal death.

STUDIES IN THE DAYLIGHT LIGHTING OF INTERIORS

An exhaustive analysis has been made of about 45,000 observations of daylight illumination made in one of the Hagerstown school buildings during the school year 1923–24. In the analysis of the data, special emphasis was placed upon the influence of clouds on the inside illumination, the outside illumination, the sky brightness, and the interrelationships of these three factors. The conclusions of the investigation show that the previously accepted theory on indoor illumination needs to be somewhat modified. It has been held that the inside-outside ratio (the ratio of the inside illumination on a desk to the outside illumination) is constant under all circumstances. This investigation shows rather conclusively that the inside-outside ratio is not constant, but has at least three laws of change, the variation being according to the season of the year, the hour of the day, and the kind and extent of cloudiness. This is also true of the sky-brightness ratio (the ratio of the indoor illumination to the brightness of the sky).

The investigation also included a study of the variation of the illumination between different points in a room under various weather conditions; also a study of the relationships existing between the illumination on a desk and the extent of the sky vault visible at that desk. From this latter work there has been developed a generalized formula by the use of which it may be possible to compute or forecast the illumination at any point in a room for any combination of environmental obstructions, even though no sky be visible at the chosen point in the working plane.

The report on this investigation is practically complete, and will soon be ready for publication as a Public Health bulletin.

VISION OF SCHOOL CHILDREN

The detailed study of the vision of school children conducted by the service, in cooperation with the departments of health and education of the District of Columbia, was continued throughout the fiscal year. During the summer session of 1926 and the regular session of 1926–27 a total of 1,068 children were examined.

Of this number 246 were retested two years after the original examination. It is this part of the investigation that promises to give very valuable data, since the developmental changes occurring in the eyes of growing children may have a most important bearing on the subject of the vision in childhood and youth.

In the cases retested various changes in vision were noted. Hyperopes increased in degree in many cases, while minor defects remained unchanged, or were improved. In other cases hyperopes had changed to myopes, and in a few cases had become emmetropic. In many instances myopes had increased in degree.

The summer school session contained no children who had been previously examined. In this group, cases of visual defect were studied from the viewpoint of school failure, and it appeared that many failures in school were to some extent due to faulty vision.

A statistical analysis of the data already collected has been made and a progress report is nearing completion. It was seen that hyperopia was the most common condition found in the eyes of these children, 88 per cent having hyperopia or hyperopic astigmatism. Seven per cent had myopia, 28 per cent had some form of astigmatism, while only 3.4 per cent were emmetropic. If it is possible to retest all of these children one or more times, the value of the study will be markedly enhanced. From the single tests made, it appears that the prevalence of hyperopia decreases with age, while the prevalence of myopia, astigmatism, and emmetropia tends to increase with age. The increase in myopia appears to take place between 6 or 7 and 10 or 11 years of age, after which time there is not much change in rate.

Among children of 12 to 16 years of age there are almost four times as many with myopia as among children 6 to 7 years of age. It seems that myopic children have relatively little power of accommodation, while those with hyperopia have much.

This investigation seems to be the only study of unselected cases in progress at this time.

COOPERATION WITH OTHER AGENCIES

The child hygiene office cooperated with the office of administrative health practice in a survey of health activities in the District of Columbia. The survey of maternity, infancy, and pre-school child hygiene has been completed, as well as that of the medical and nursing service in the schools. A survey of the school buildings is under way and the additional data obtained will be added to the final report.

On the request of the director of the Girl Scouts of the District of Columbia, the child-hygiene office continued the physical examination of girls who registered for attendance at the Girl Scouts' camp. At the close of the year 131 examinations had been made.

MISCELLANEOUS

Teaching of child hygiene to medical students.—A study of this question brought to light the fact that of 26 medical schools from which information was received, a majority teach child hygiene in some form. Almost half of them give definite lectures on the subject, while others content themselves with stressing the preventive aspects of pediatrics. The students of over 30 per cent of these schools have access to child-welfare clinics. There is apparently a growing feeling among the medical schools that child hygiene should have some place in the education of the modern physician.

An exhaustive statistical study of the tonsils has been completed and is in course of publication as a joint paper from the statistical and child-hygiene offices.

Industrial Hygiene and Sanitation

The activities of the office of industrial hygiene and sanitation were carried on under the direction of Surg. L. R. Thompson. They included (1) investigations of tetraethyl lead; (2) studies of occupational health hazards; (3) studies of occupational diseases; (4) studies of the causes of industrial absenteeism; (5) cooperation of Government departments; (6) cooperation with industrial and other agencies.

INVESTIGATIONS OF TETRAETHYL LEAD

Surg. J. P. Leake has continued in charge of the investigation of tetraethyl lead. In connection with this investigation it was found that appreciable amounts of lead were present in garage dust even where no lead-containing motor fuel had been used. This might be as much as one-third of a milligram in 10 cubic meters of air. the amount of air breathed by an active worker during an 8-hour day. In order to determine how widespread this dissemination of small but distinct amounts of lead might be, a survey was made in cooperation with the health officers of New York City, Chicago, Philadelphia, Detroit, Los Angeles, Cleveland, St. Louis, Baltimore, Boston, Pittsburgh, San Francisco, Buffalo, Washington, and New Orleans. The field work of this survey was done by Assistant Physical Chemist J. J. Bloomfield, detailed from the office of industrial hygiene and sanitation for the purpose. There were included samples of air dust not only from garages, but also from other working places. The analyses have not yet been completed, but the results thus far indicate as high lead content in the air in some other industrial establishments, supposedly free from lead exposure, as in garages.

STUDIES OF OCCUPATIONAL HEALTH HAZARDS

Ventilation studies.—Studies in ventilation have been carried on under the supervision of Associate Sanitary Engineer Leonard Greenburg. Laboratory studies which were begun during the preceding fiscal year on the electrical charges and buffering capacities of various dusts have been finished, and the data are being prepared for publication. These studies show interesting and important differences in the reactions of particles of various dusts in suspension, and may possibly throw some light on the mechanism by means of which certain of these dusts cause injury to the lung tissue.

An investigation of school ventilation was conducted in seven of the schools in the city of New Haven, Conn., beginning in the autumn of 1926. The purpose of the study has been to determine atmospheric conditions maintained by various systems of ventilation, and, if possible, to relate the effects of these conditions to the respiratory disease rates of the children exposed. The observations lasted for a period of six months and dealt with over 2,000 children. The results are being analyzed. This study is a part of a general plan to obtain accurate information on the efficiency and operating requirements of ventilating systems in actual use.

A study of the hazards of spray coating undertaken in cooperation with the committee of the National Safety Council has been completed, and a report similar to that of the benzol report is being prepared.

An investigation of lead poisoning in a storage-battery plant in Connecticut was undertaken at the request of the State health commissioner. An investigation was also made of the means of air-conditioning of one of the larger buildings of the Government which houses a considerable number of employees.

Assistance was given in naming a committee to cooperate with the Architect of the Capitol in making specifications for a new ventilating system for both the House of Representatives and the Senate Chambers.

Dust studies.—The studies of dusty trades have been made under the immediate supervision of Asst. Surg. Albert E. Russell.

Of the seven original studies, four have been completed, and three—on soft-coal dust, vegetable dust, and municipal dust—are still being carried on.

The cement study gave considerable information regarding the reaction, in terms of sickness, of employees to their working environment. An analysis of the morbidity data in a cement plant revealed an interesting process of self-selection of the employees, in that those who apparently were most resistent to the effects of the dust tended to remain in the industry, while those who were susceptible to respiratory diseases and to the effects of the other potential health hazards quit the industry after varying periods of service.

Among those who remained the entire three-year period of observation, the average frequency of disability from respiratory diseases for persons who had worked in the industry from one to eight years was 235 cases per thousand men. After eight years of service, respiratory disability increased rapidly to 769 cases annually per thousand men with from 12 to 20 years of service. This increase was not due to the age of the individuals with a longer length of service, because the same tendency was found among the men under 45 as among those over 45. Respiratory diseases which occurred in excess among cement workers when compared with a group of employees in a relatively nondusty industry and with a group of adult males in the general population of the community in which the cement workers lived, were as follows: Diseases of the nasal fossae, acute bronchitis, influenza and grippe, and diseases of the pharynx and tonsils. From the nature of the respiratory diseases which occur with excessive frequency among cement workers, it appears that cement dust irritates the entire upper respiratory tract. The incidence of pulmonary tuberculosis and of pneumonia among cement workers was comparatively low.

Among the men employed in those occupational groups in the cement industry where there was relatively little exposure to dust, the respiratory rate was not greatly above that found in certain nondusty industries. In the industry itself, employees in the dustiest departments of the mill and in the quarry, where, in addition to dust, men were exposed to the inclemency of the weather, the rate for respiratory disability ranged from 60 to 109 per cent above that found in the relatively nondusty departments of the plant.

The nonrespiratory diseases which appeared to be associated with this industry were furunculosis, conjunctivitis, and other diseases of the eye, and diseases of the stomach and intestines. These diseases were particularly high in rate among those working in the heavier concentrations of cement dust. Rheumatism was especially frequent among outdoor workers and in the group exposed to sudden changes in working conditions.

A bulletin on this subject is being prepared under the supervision of Assistant Statistician Dean K. Brundage.

Granite dust.—The field study of the hazard of dust in the granite-cutting industry was completed in August, 1926, and the analysis of the material is under way. An unmistakable hazard is present, the chief result of which is a rapidly fatal form of pulmonary tuberculosis. Both the sickness records and the physical examinations indicate, however, that the hazard exists chiefly among the cutters themselves, whether doing hand-pneumatic work or surface-machine work, and that occupations in which the dustiness is not greater than the average dustiness of the sheds are not seriously affected. It seems practicable to reduce the dust to a presumably safe level, and it is felt that the present study is capable of indicating approximately what this level is.

Granite dust has a free silica content of between 20 and 30 per cent. Accordingly, it would not be expected that serious impairment of the worker would occur except after years of exposure. The data indicate a rising rate of sickness and mortality with length of service in the industry; but, although the presence of silicosis can be detected in most workers within a very few years after entering the industry, severe disability and death from tuberculosis comes only to workers with 15, 20, or more years of exposure to granite dust.

The mortality rate from tuberculosis among granite cutters has been rising rapidly in recent years, the annual death rate from this cause alone now being about 18 per 1,000, on the basis of the deaths occurring in the course of the present study in a population under direct observation.

Analysis of the data collected with regard to silica dust is being made by Associate Statistician Rollo H. Britten.

While the time of the statistical units of the office has been given mainly to the preparation of the bulletins on cement dust and granite dust, the data on the metal polishing and hard-coal dusts have been tabulated. In connection with the hard-coal dust, the mortality data have been made the subject of a special study and will appear as a joint bulletin from the statistical office and the office of industrial hygiene and sanitation.

Textile dust.—A unit is maintained at Greenville, S. C., for the primary purpose of ascertaining whether cotton dust in a spinning and weaving plant is hazardous to the health of the workers. The study is complicated by the presence of certain other factors, particularly the high temperatures and humidities in the plant and the extensive employment of night workers. The field study will continue for a year or more, but preliminary analyses of the sickness records and physical examinations so far obtained suggest high rates for sickness of very short durations, a high prevalence of chronic post-nasal and pharyngeal catarrh, and more sickness among night workers than among day workers (particularly in the weaving room, where the relative humidity is necessarily kept high, and in the carding room, where the dust appears to be densest).

In the study of the effects of municipal dust, morbidity records are being kept of approximately 900 men, of whom 385 have been physically examined since the study began.

The study of the physical and chemical characteristics of the dust in all the investigations has been made by Asst. Physical Chemist J. J. Bloomfield, under the direction of the medical officer in charge.

A study of atmospheric pollution associated with the mining and subsequent cleaning of anthracite coal showed that, as far as dust exposure was concerned, men engaged in this industry could be divided into three groups—those actually engaged in mining coal, those occupied in breaking new ground for mining by means of rock drilling, and those employed in hauling coal and maintaining proper working conditions of the mines. In the group under observation by the service, miners and miners' helpers comprised approximately 67 per cent of the total group. These workers were exposed to exceedingly large amounts of dust, running as high as 233,000,000 particles per cubic foot, as contrasted with 2,500,000 particles per cubic foot of air for the maintenance men. About 2 per cent of the men under observation were engaged in rock work, with an average exposure to dust of about 130,000,000 particles per cubic foot of air.

As previously set forth, in the granite study workers exposed to high concentrations of granite dust showed an extremely high rate of tuberculosis as compared with workers who were exposed to moderate amounts of the dust. It was therefore of the greatest importance to determine what degree of reduction in dust was possible through ventilation. Observations of atmospheric conditions in the modern granite-cutting shed, equipped with the best-known devices for the removal of dust, gave some very interesting comparisons. In plants without ventilation, pneumatic hand-tool operators were exposed to an average dust count of over 60,000,000 particles per cubic foot; in the plant with ventilation, operators doing similar work were exposed to an average count of 10,000,000 particles per cubic foot. Surface cutters with exhausts in plants without ventilation were exposed to an average of between 40,000,000 and 50,000,000 particles; those in the plant with ventilation, to slightly over 10,000,000 particles. Tool grinders in plants without ventilation were exposed to approximately 30,000,000 particles per cubic foot, as against approximately 12,000,000 particles in the plant with ventilation. The general plant atmosphere in the plants without ventilation contained approximately 23,000,000 particles per cubic foot, and that in the plant with ventilation, under 10,000,000 particles per cubic foot. This comparison is of the utmost importance in demonstrating the possibilities in the ventilation of granite sheds by means of modern devices.

Petrographic analyses made of the dusts in the four studies were as follows:

In silver polishing free silica was found to vary from one-tenth of 1 per cent to 1.75 per cent. In one sample in the buffing department the dust contained 19 per cent free silica. Hard-coal dust, to which the coal miners were exposed, averaged about 1.5 per cent free silica. Rock dust from the hard-coal mines averaged about 31 per cent of free silica. Granite dust at Barre, Vt., showed approximately 31 per cent of free silica, while the mixture of granite dust and the dust from the grinding machines showed approximately 38 per cent of free silica, with a small amount of steel fragments.

Studies in illumination.—Studies in illumination were conducted under the direction of Physicist James E. Ives and Asst. Surg. Langdon R. White.

Studies of the effect of illumination upon vision and production, which were made in the Chicago post office, were completed in August, 1926, having been conducted over a period of approximately two years.

The analysis of the results of the study is still in progress, but is nearly completed. At this time the following conclusions have been reached as a result of the analysis of the eye data: (1) The acuity of vision of the men tested, as determined by the split circle apparatus, was related to the degree of illumination under which they were working; (2) three men out of the 11 whose records were analyzed showed significant differences between the morning and afternoon acuity readings as determined by the apparatus. This difference may have been due to ocular fatigue; (3) interesting results were obtained regarding the relative ability of the subject to see correctly gaps in various parts of the circle, and a correlation was found to exist between this ability and astigmatic errors of the eyes.

Analysis of the records on production as determined by the card-sorting tests brought out the following facts: (1) The records of all the men showed a positive correlation between the speed of sorting and the degree of illumination under which the tests were made; (2) decreasing the number of foot-candles of illumination did not cause the rate to fall to that noted previously at the same illumination; (3) the curve obtained by plotting the average production against the illumination rose steadily throughout the tests, probably as the result of learning by practice; (4) a negative correlation was found to exist between the degree of illumination under which the tests were made and the time required to read the addresses on the cards.

Natural illumination in factories, hospitals, schools, etc.—In order to study the distribution of daylight within factories and schoolrooms with windows of all sizes, heights, and locations, and ceilings of varying heights, an experimental building—"an experimental illumination cabinet"—has been designed and is now being erected on the grounds of the Department of Agriculture experimental station, Arlington County, Va. This building is 30 feet square, with walls about 16 feet high. The walls are glazed throughout nearly their whole area, that is, from 3 feet above the floor to 15 feet above the floor. By means of shutters of various sizes the openings of the windows can be adjusted to any position, shape, or area desired. The height of the ceiling can also be varied at will. By means of readings, continued throughout the calendar year, of the illumination over the floor of this building, with its windows of varying sizes, aspects, and heights, and with the ceiling adjusted to different heights, it is believed that it will be possible to obtain information on the basis of which it will be possible for architects to design the area, height, and location of the windows and ceiling of a room so that it will have any desired degree and distribution of illumination.

Study of the loss of light due to smoke in New York City.—In order to study the loss of light in Manhattan Island due to smoke and dust and other elements in the atmosphere, daylight recorders were installed in November and December on the roof of the United States marine hospital No. 70, New York City, at the lower end of Manhattan Island, where the air is very smoky, and on the roof of one of the buildings of the United States quarantine station on Hoffman Island, in lower New York Bay, about 9 miles south of the hospital, where the air is comparatively free from dust and smoke. From the difference in the daylight records for these two stations it is possible to determine the amount of light lost for any hour of the day. The records for January and February have been analyzed and are nearly ready for publication. They show a great absorption of light by the smoke, the degree of absorption depending upon the time of day and the clearness or cloudiness of the sky.

Posture in industry.—Analysis of the special study of the effect of exercise on physical condition and posture among high-school children in New York was completed and a paper was prepared for publication. It was determined that the group given special physical exercise for a period of four months gained more than the control group in strength, height, weight, and vital capacity, but no discernible changes relative to posture were found. One of the interesting by-products of the study was the possibility of correlating consecutive measurements on the same child, since a complete physical examination was given both at the beginning and at the end of the study. Many measurements on which reliance is generally placed were found to have such wide fluctuations as to suggest that a reading made on a single examination is insufficient.

A bibliography of the literature on posture in relation to health was published during the year by Surg. Louis Schwartz.[14] The first of a series of papers on the general posture data collected previously was completed. This manuscript deals with the changes in bodily growth with age, covering the period from 3 to 50 years.

Occupational dermatosis.—During the year a review of the available literature has been made and compiled for publication. This bulletin will contain information covering all the processes, occupations, and substances which have been reported as causing dermatosis, with brief remarks as to the nature of the symptoms, and the industry or occupation in which found.

Pneumonia among steel workers.—Under the direction of Asst. Surg. Albert E. Russell, a study was begun at Johnstown, Pa., to determine, if possible, the occupational health hazards of the steel industry which were the cause of the high rate of pneumonia in certain occupational groups in this industry. A general occupational and job analysis was made in the various departments of this plant.

The study planned includes an investigation of all respiratory diseases which cause an absence of eight days or longer, and a careful study of all pneumonia cases in the steel industry. Various environmental factors, such as humidity, temperature, dust, and exposure to fumes, will be carefully investigated.

As a method of obtaining knowledge of the environment of the steel worker outside his working hours, a house-to-house survey in a small community outside Johnstown will be made, covering the living conditions of all the steel workers in this community. If the information contained in this survey is found insufficient for any of the working groups, this survey will be supplemented by a more general survey of workers living in Johnstown and neighboring communities.

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[14] Public Health Reports, May 6, 1927. (Reprint No. 1156.)

STUDIES OF THE CAUSES OF INDUSTRIAL ABSENTEEISM

In addition to the dust studies, the more general investigations of industrial morbidity among larger groups of the occupied population have been continued in cooperation with the office of statistical investigations. Monthly reports are being received of sickness causing a disability for one week or longer from 35 sick benefit associations having a combined membership of approximately 135,000 industrial employees. Analyses of these records are published from time to time giving information as to the frequency and severity of disabilities by sex and according to the type of illness, season of the year, etc., for this sample of the industrial population.

Some of the more general results obtained from the tabulations covering a 10-year sickness experience of the employees of a public utility in Boston were published during the year.[15]

These morbidity studies have been under the supervision of Assistant Statistician Dean K. Brundage.

COOPERATION WITH OTHER GOVERNMENT DEPARTMENTS

Bureau of Mines.—The studies in mine sanitation were carried on during the fiscal year with the Bureau of Mines, Department of Commerce, the medical personnel being detailed from the Public Health Service to that bureau for the purpose.

The health and safety branch was created in the Bureau of Mines on July 15, 1926, to include the health division (formerly the chief surgeon's office) and the safety division (formerly the safety service division). Surg. R. R. Sayers was designated as chief of the health and safety branch and chief surgeon in charge of the health division.

The activities of the health division have included experimental studies on carbon monoxide, lead poisoning from ethyl gasoline, oxygen, toxic effects of alkyl halides used for refrigeration, warning agents for use in manufactured gas, physiological effects of atmospheric conditions, synthetic atmospheres in caisson diseases, physical examination of miners, causes of wastes, medical organization and industrial hygiene, sanitary survey of mining camps, dust and ventilation, development of respirators for use in industry as protection against various vapors and dusts, approval of gas masks, and analyses of mine gases.

Post Office Department.—As previously stated under "Studies of illumination," cooperation has been continued with the Post Office Department in further tests to determine the most efficient lighting system for post offices.

Bureau of Standards.—The study of occupational hazards among employees of the Bureau of Standards was continued.

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[15] Public Health Reports, Feb. 25, 1927. (Reprint No. 1142.)

During the early part of the fiscal year special investigation was made in one of the laboratories located in the chemistry building to determine the amount of mercury present in the atmosphere.

Surveys of the lighting of rooms in Government buildings have been much more numerous during the past fiscal year. These surveys have included the Treasury Building, the Graham Building, occupied by the Coast Guard, and the Winder Building, occupied by the Bureau of Mines.

Milk

The milk investigations were continued under the direction of Sanitary Engineer L. C. Frank, with headquarters at Montgomery, Ala.

An investigation of the possibility of unifying milk-control work in the United States.—For the past several years this office has been engaged in a study of the possibility of unifying milk control in the United States. The work has consisted of an attempt to study the effect of applying a uniform state-wide program [16] in the various States. Such States as indicated a desire to associate themselves with a program of unification have been assisted in organizing their state-wide milk-control work. The States now included in the program are as follows: Alabama, North Carolina, Texas, Tennessee, South Carolina, Missouri, Arkansas, Louisiana, Kentucky, Virginia, Mississippi, West Virginia, and Arizona.

As a result of the work of assisting the various State boards of health in organizing their state-wide milk-control programs, the number of cities which have enacted the tentative standard milk ordinance recommended by the service has been steadily increasing, as shown by the following figures: 1924, 7; 1925, 53; 1926, 100; 1927, 160.

Annual ratings of cities to determine the improvement in milk sanitation effected by the standard ordinance.—One of the important parts of the service program of milk investigations was the working out of a method of measuring the milk sanitation status of a community in quantitative terms so as to permit of city to city and year to year comparisons, and consequently, to permit of the measurement of progress. A satisfactory method has been evolved which has been used in determining annual milk sanitation ratings of standard-ordinance cities. During the fiscal year 1927, milk sanitation ratings were determined for 113 cities.

A particularly intensive study was made of the progress of milk sanitation in 14 Alabama towns.[18] From this report it will be evident that the standard ordinance has materially helped to bring about the following observed results in the 14 Alabama towns:

(1) A marked improvement in the quality of the retail raw-milk supplies, the retail raw-milk rating increasing from 43.9 per cent to 94.3 per cent, an improvement of 115 per cent.

(2) A marked improvement in the quality of the raw milk delivered to Pasteurization plants, the raw-milk-to-plants rating increasing from 46.2 per cent to 90.8 per cent, an improvement of 97 per cent.

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[16] A National Program for the Unification of Milk Control. Public Health Reports. July 30, 1926. (Reprint No. 1098.)

[18] Standard Milk Ordinance Results in Fourteen Alabama Towns. Public Health Reports, Mar. 11, 1927. (Reprint No. 1144.)

(3) A marked improvement in the care with which the Pasteurization process is applied, the Pasteurization-process rating increasing from 22.2 per cent to 85.8 per cent, an increase of 286 per cent.

(4) An increase in the percentage of milk Pasteurized, the percentage for the group of towns as a whole increasing from 6.9 to 21.6 per cent, and the number of towns provided with Pasteurized milk increasing from three to nine, five of these now having over 50 per cent of the milk Pasteurized.

(5) A marked increase in the general milk-sanitation rating, which summarizes the combined effect of the three specific ratings and of the percentage of milk Pasteurized. The general rating of the group of 14 communities has increased from 23.2 to 56.1 per cent, an improvement of 142 per cent.

(6) A marked increase in the consumption of market milk, the combined consumption having increased from 6,533 gallons per day to 12,413 gallons per day, representing an increase of 90 per cent.

Studies of the prevalence of milk-borne outbreaks of disease.—During the year, studies of the prevalence of milk-borne outbreaks of communicable disease were continued. The work has been done by means of an annual canvass of the approximately 700 cities of over 10,000 population in the registration area of the United States and of the various State health departments of the United States.

The results of the work thus far have shown the following number of reports of outbreaks of various diseases for the years named:

Outbreaks of milk-borne disease reported by State and city health officers

Disease	Year								Total
	1918	1919	1920	1921	1922	1923	1924	1925	
Typhoid fever	20	5	10	20	9	15	34	31	144
Diphtheria	0	0	1	1	1	1	1	1	6
Septic sore throat	0	0	1	0	1	1	1	6	10
Scarlet fever	0	2	1	1	4	6	5	4	23
Dysentery	0	0	0	1	0	0	2	0	3
Paratyphoid	0	0	0	0	0	0	0	1	1
Paratyphoid B	0	0	0	0	0	0	1	1	2
All diseases	20	7	13	23	15	23	44	44	189

The increase in the number of reported outbreaks should not be interpreted as an actual increase in outbreaks occurring, but rather as an increase in the completeness of reporting due to the increased interest in milk sanitation. The work is being continued from year to year.

The testing of Pasteurization machinery.[19]—In April, 1926, the testing of Pasteurization machinery was begun in the city of Chicago for the purpose of determining which types of Pasteurization machinery can be depended upon to Pasteurize effectively. This work has been continued throughout the present fiscal year. A great number of types of Pasteurization machinery have been tested and many defects found. In most cases the manufacturers have immediately modified their designs so as to remove the defects found as a result of the service testing, and in consequence the work has brought about a rapid improvement in the design of Pasteurization machinery long before the publication of any results of testing.

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[19] Definitions of Pasteurization and Their Enforcement. Public Health Reports, Apr. 29, 1927. (Reprint No. 1154.)

It is believed that during the coming fiscal year it will be possible to publish a preliminary report outlining the defects found in the various types and the extent to which the defects have been remedied. This is contemplated in order to give city and State health officers a basis for the approval or disapproval of Pasteurization machinery installed or proposed to be installed in their jurisdiction.

The preparation of a standard milk-control code.—During the fiscal year work was begun upon the preparation of a standard milk-control code based upon the experience secured in the operation of the standard milk ordinance in the various standard-ordinance States. The first draft of the code was completed during the winter of 1926–27, and then submitted to the various standard-ordinance States and to other milk-control authorities for their criticism. Based upon the criticisms received, the preparation of the second draft of the code was then begun and it is now almost completed. The code is designed to give local health officials a complete textbook upon which municipal and State milk-control programs can be based.

Office of Statistical Investigations

The office of statistical investigations has been under the general direction of Statistician Edgar Sydenstricker. The investigations include work carried on in the statistical office independently as well as in collaboration with other stations of the division of scientific research and with other divisions of the service.

The organization of the office is along the same lines as it has been since its establishment in 1919 and as stated in previous annual reports.

About two-thirds of the time of the statistician in charge was devoted to general statistical work outside of the office of statistical investigations. Approximately 30 per cent of the time of the remainder of the personnel of the office was devoted to assisting in the statistical work of other offices and divisions of the service.

The statistical personnel of certain other offices in the scientific research division, such as industrial hygiene, child hygiene, and influenza investigations, functioned as a unit with the personnel of the statistical office, the personnel being used interchangeably on any occasion when it was deemed advisable.

STUDIES IN MORBIDITY STATISTICS

The collection of statistics of morbidity was continued. These include records not only of those diseases which ordinarily are reportable but also of sickness and impairments resulting from other causes in special population groups. In cooperation with the office of industrial hygiene and sanitation, reports were received covering about 150,000 industrial workers, this being the seventh year of this collection of morbidity records. In addition, morbidity reports were collected by the staff from about 1,000 employees of a large silk manufacturing establishment in Connecticut. For the purposes of a study of morbidity, this accumulation of records, in conjunction with the results of the Hagerstown morbidity study and other special studies, constitute a collection of statistical material which is being used by the several offices of the scientific research division in connection with other epidemiological studies.

In addition to these original records a collection is being made of records of morbidity and of the results of physical examinations, which have been published from time to time in medical and other periodicals. There are on hand also the results of many thousands of physical examinations made in the course of field studies by the Public Health Service. The project has been undertaken of bringing together all of these results into a single volume on statistics of physical impairments and of morbidity. It was hoped to be able to complete this work during the past year, but the task is of such magnitude that it must be done gradually with the limited personnel available.

The principal morbidity study undertaken by this office was that made in Hagerstown during the period 1921–1924. The records were tabulated prior to July 1, 1926, and a series of papers giving some of the results of this study were published during the past year. One of the papers, entitled "A Study of Illness in a General Population Group" (Hagerstown Morbidity Study No. I),[20] summarized the findings.

In another paper entitled "The reporting of notifiable diseases in a typical small city" (Hagerstown Morbidity Study No. II),[21] it was shown that in this community physicians were actually called in attendance on 90 per cent or more of the cases of the more serious notifiable diseases, such as typhoid fever, the pneumonias, diphtheria, scarlet fever, and epidemic influenza, but less than 65 per cent of the cases of measles, scabies, impetigo, whooping cough, and chicken pox were so attended. Of cases that were seen by physicians, 85 per cent or more of the cases of diphtheria, scarlet fever, and influenza were reported, about 60 per cent of the pneumonias, and 30 to 40 per cent of the measles, whooping cough, and chicken pox. These findings are valuable, also, in indicating the accuracy of incidence rates of the various diseases when based upon physicians' reports. Obviously, rates for diseases whose cases were attended by physicians and reported by physicians were fairly accurate, such as scarlet fever, typhoid fever, diphtheria, epidemic influenza, and probably other serious but rarer diseases in this category. The incidence rates based on physicians' reports for the other more common notifiable diseases fell far short of the incidence actually observed in this typical community.

A further analysis of the results of the Hagerstown morbidity data was entitled "The Extent of Medical and Hospital Service in a Typical Small City" (Hagerstown Morbidity Study No. III),[22] which showed that 46 per cent of all illnesses lasting about three days or longer were attended by medically trained physicians, 1.34 per cent were hospitalized, and very few were attended by trained nurses at home, while less than one-half of 1 per cent were attended by chiropractors and osteopaths. It was also shown that about 45 per cent of the cases attended by physicians were diseases of the respiratory system, 11 per cent diseases and disorders of the digestive system, and another 11 per cent were the acute infectious diseases. Of cases receiving hospital care, 28 per cent were diseases of the digestive system, 15 per cent were nonvenereal diseases of the genito-urinary system, and 10 per cent were tonsillectomies and adenoidectomies.

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[20] Public Health Reports, Sept. 24, 1926. (Reprint No. 1113.)
[21] Public Health Reports, Oct. 8, 1926. (Reprint No. 1116.)
[22] Public Health Reports, Jan. 14, 1927. (Reprint No. 1134.)

The next general paper was a presentation and discussion of "The age curve of illness in a typical community" (Hagerstown Morbidity Study No. IV),[23] in which it was pointed out, among other results, that the period of greatest freedom from illness was 20 to 34 years of age, and that this higher rate of sickness among children was due largely to a "sickly" group of individuals who were frequently ill from respiratory, digestive, and infectious causes.

In "A comparison of the incidence of illness and death" (Hagerstown Morbidity Study No. V),[24] it was pointed out that there were about 107 illnesses observed for each death, but that the number of sicknesses per death varied greatly, not only according to cause but also according to age. This study was the first of the kind on a general population group and showed that although conditions and diseases such as those of the circulatory system and of the kidneys and annexa manifested themselves in less than 15 illnesses per death, the diseases of the digestive and respiratory systems, and of the eyes, ears, and skin occasioned 200 or more illnesses per death. Statistical evidence was made available, that, on the one hand, mortality records do not accurately portray the frequency or prevalence of the different types of disease, and that, on the other hand, morbidity records can not reveal the existence of serious impairments such as those affecting the circulatory system and the kidneys. The ratio of illnesses to deaths at different ages was lowest under 5 years of age and over 45 years, and highest in the age period 10 to 14 years, thus indicating the age variation of resistance to death.

A comparison of "The illness rate among males and females" (Hagerstown Morbidity Study No. VI),[25] brought out some rather interesting sex differences, the most important of which were the greater frequency of sickness among males under 5 years of age and the greater frequency of illness among females at all other ages. It was also shown that the high illness rate among males in childhood was due not only to a greater incidence of certain diseases but also to the existence of a larger proportion of individuals who were ill frequently, a fact which is reflected in the higher death rate of males at this period of life; on the other hand, the high female morbidity rate in adolescence, which is also caused by a relatively larger proportion of persons frequently sick, even when menstrual disorders are excluded, is not reflected in a higher death rate, thus pointing to a greater resistance among females than among males of this age.

STATISTICAL AND EPIDEMIOLOGICAL STUDIES OF SPECIFIC DISEASES

The field study of respiratory diseases, which was undertaken in the silk manufacturing establishment to which reference has been made, was brought to a close, and the work of tabulating and analyzing the results was begun. In addition to the recording of cases, rather detailed records of symptons, contacts, and various other circumstances were obtained, and records were also kept of meteorological conditions in the locality, as well as of temperature and humidity in the various rooms within the plant. In this study, which is under the immediate supervision of Assistant Statistician Dorothy Wiehl, the staff had the assistance of Associate Sanitary Engineer Leonard Greenburg and Assistant Physical Chemist J. J. Bloomfield and the advice of Prof. C.-E. A. Winslow. It is planned to present the results of this study in a preliminary way during the coming year.

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[23] Public Health Reports, June 10, 1927. (Reprint No. 1163.)
[24] Public Health Reports, June 24, 1927. (Reprint No. 1167.)
[25] Public Health Reports, July 29, 1927. (Reprint No. 1172.)

A statistical and epidemiological study on tonsillitis and related throat conditions by Associate Statistician Selwyn D. Collins was completed and submitted for publication. The results of this study have already been outlined in a previous report.

A bulletin entitled "Economic Status and Health,"[26] by Associate Statistician Selwyn D. Collins, was published. While this study was an exhaustive review of the relevant morbidity and mortality data already published, it contained new analyses of this material and in addition presented heretofore unpublished records collected by this and other offices. Detailed consideration was given to morbidity and mortality rates from all causes among groups differentiated according to economic classes, as well as to mortality by age and cause and morbidity and mortality among infants and young children. The data were critically examined from the point of view of their usefulness in throwing light upon the interesting question of how far environmental conditions play a part in determining the morbidity and mortality rate as contrasted with factors involved in heredity and in selection. The conclusion was suggested that the data at hand are not sufficient to indicate precisely the relative importance of these factors, although they seemed to show that all are important, and the necessity was emphasized for a study which would enable certain of these factors to be held constant while the variation in the other factors could be observed in various population groups during a considerable number of years.

A bulletin entitled "Mortality among negroes in the United States," by Assistant Statistician Mary Gover, was completed and submitted for publication. This bulletin brought down to date the more salient facts about the distribution and increase of the negro population, the trend of white and negro birth and death rates, the expectation of life, and causes of death at different ages in the two sexes. The bulletin was intended as a convenient reference book and was undertaken at the suggestion of several negro sanitarians. Considerable attention was given to the course of the mortality rates from different causes among negroes and whites in certain localities for which such records are available, and a number of comparisons were made of the death rates from certain causes in the two races in contrasted geographical areas.

A bulletin by Assistant Statistician Robert Jordan was practically completed on the mortality of coal miners, with special reference to anthracite coal miners. This bulletin is a comprehensive review of the available data both in this country and abroad, and includes an analysis of a large number of records of mortality in the anthracite region which were collected by the office of industrial hygiene and sanitation. It was found that diseases of the respiratory system caused 55 per cent of all deaths, exclusive of accidents and homicides, among anthracite miners, and only 30 per cent in other occupations. The proportionate mortality from pulmonary tuberculosis and broncho-pneumonia was definitely higher for anthracite coal miners, while the rate for anthracosis was 3.83 for the anthracite coal miners as compared with 0.50 for other occupations. The peak of proportionate mortality from pulmonary tuberculosis was between the ages of 45 and 54, or about 20 years later than the maximum incidence in other occupations.

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[26] Public Health Bulletin No. 165.

Work was continued on a statistical and epidemiological study of scarlet fever by Assistant Statistician Dorothy Wiehl. Similar studies are also in preparation on diphtheria and, in conjunction with the office of influenza investigations, on respiratory diseases.

In addition to the specific studies referred to above, a number of shorter pieces of work were completed during the year. Among these may be mentioned the following:

Twelve monthly reviews were prepared on the world prevalence of disease, summarizing the current issues of the Epidemiological Report of the health section of the League of Nations.

A statement was prepared on certain phases of infant mortality in the United States for use in connection with the Commission on Child Welfare of the League of Nations.

A survey was made of the vital statistics bureaus of the Maryland State health department and of the District of Columbia, in conjunction with more general surveys by the service.

WORK IN ASSOCIATION WITH OTHER OFFICES AND DIVISIONS OF THE SERVICE

A considerable part of the work of the office of statistical investigations was the rendering of assistance to other divisions of the service. This cooperation comprises the following: (1) Technical advice and criticism on statistical procedure; (2) assignment of statistical personnel to assist other statistical units; (3) use of mechanical equipment and of operators.

The major part of the work has been with the following offices and divisions:

1. In the division of scientific research, with field investigations of child hygiene, of industrial hygiene and sanitation, of nutrition (on pellagra), diphtheria, interepidemic influenza and minor respiratory diseases, goiter, and with the Hygienic Laboratory.
2. In the division of venereal diseases the statistical compilations of current reports on venereal diseases from State health departments and clinics have been carried on under the supervision of the office of statistical investigations, and certain other tabulations were made.
3. The office of statistical investigations collaborated with the division of sanitary reports and statistics and the hospital division on a number of routine matters.

The detailed reports on the statistical phases of the work of other units and divisions with which this office collaborated are included in their several reports.

COOPERATION WITH OTHER AGENCIES

In addition to answering routine requests for statistical information, cooperation with agencies outside the service during the past year has been prncipally as follows:

With vital statisticians and epidemiologists in various States and cities on matters affecting statistical procedure, report forms for disease notification, planning of epidemiologcal studies, and the like.

With committees of the American Public Health Association, the American Statistical Association, the Service of Epidemiological Intelligence and Public Health Statistics of the health section of the League of Nations, the International Institute of Statistics, and with the health demonstration personnel of the Milbank memorial fund on questions of public health and vital statistics.

Stream Pollution

Investigations of stream pollution and allied problems have been continued, as heretofore, under the general direction of Surg. W. H. Frost, stationed in Baltimore, with Sanitary Engineer J. K. Hoskins as executive officer in immediate charge of the research laboratory and administrative headquarters at Cincinnati, Ohio, and with the advice and assistance of the same group of special consultants who have served for several years. Under this general direction the work is organized in three main divisions, each of which is directed by one or more experienced research workers, responsible for the detailed plans and execution of investigations and for preparation of reports thereon.

The principal activities during the past year have been as follows:

(1) A study of the pollution and natural purification of the upper portion of the Mississippi River, by Sanitary Engineer H. R. Crohurst, with headquarters at Minneapolis, Minn.

(2) Experimental studies of the phenomena of natural purification in polluted waters, conducted jointly by Bacteriologist C. T. Butterfield, Chemist E. J. Theriault, and Special Expert (biologist) W. C. Purdy.

(3) Collective and experimental studies of the efficiency of artificial purification of water supplies, under the direction of Sanitary Engineer H. W. Streeter.

(4) Miscellaneous activities, including special investigations, conferences with other agencies, preparation of general reports, etc

STUDY OF THE POLLUTION AND NATURAL PURIFICATION OF THE UPPER MISSISSIPPI

Early in the year 1925 requests were made by the State health authorities of Minnesota and Wisconsin and by a joint interim committee of the legislatures of the two States for cooperation by the Public Health Service in a proposed study of the sewage pollution of the upper Mississippi River, more especially in the vicinity of St. Paul and Minneapolis and in the stretch below these cities, where the river forms the interstate boundary between Wisconsin and Minnesota. It was ascertained by several conferences and a preliminary survey that conditions of rather gross pollution, affecting the interests of the two States, existed in this section of the Mississippi; that these conditions required intensive study as a basis for devising appropriate remedial measures; and that the two States concerned, together with the cities of St. Paul and Minneapolis, were prepared to furnish funds to support such an investigation to be conducted under the direction of the service. It appeared, further, that the proposed study would be of value not only as aiding in the solution of the local interstate problem but also as furnishing data which would be of more general significance in relation to the study of stream pollution problems elsewhere. Consequently, in March, 1926, Sanitary Engineer H. R. Crohurst was assigned to conduct a cooperative investigation in accordance with this general plan.

After some months of necessary preliminary work, collecting and supplementing the requisite data on stream flow and on sources contributing to pollution of the river, a laboratory was established at Minneapolis for the bacteriological and chemical examination of water samples. Fourteen sampling stations were established on the river and its tributaries, covering the river stretch from the northern limits of Minneapolis, through that city and St. Paul, and downstream to the city of Winona, near the Minnesota-Iowa State line. The collection and examination of samples from these stations on a systematic schedule was begun shortly before July 1, 1926, and has been continued throughout the year with only minor interruptions.

It was originally planned to continue this work only through one full year, but at the request of the cooperating agencies it has been extended to September 1, 1927, in order to afford observations through two summers characterized by quite different conditions of stream flow.

After discontinuance of the field work in September, 1927, some months will be required for the preparation of a comprehensive report. However, in the meantime, as data have been collected, they have been made immediately available to the cooperating agencies for such use as they might wish to make of them in developing plans for remedial measures; and in January, 1927, a preliminary report, summarizing results of the study up to that time was submitted through the joint legislative committee in the Legislatures of Minnesota and Wisconsin.

The study has been eminently satisfactory in the effective and harmonious cooperation which has been maintained with the several contributing agencies, and the observations made promise to be useful both as a contribution to general knowledge of stream pollution and in their application to the development of local remedial measures. With reference to this local use, a metropolitan drainage commission has already been created for the purpose of developing plans for controlling the sewage pollution from Minneapolis and St. Paul and has begun its work, making use of the data collected in this study.

EXPERIMENTAL STUDIES OF NATURAL PURIFICATION

The experimental studies of natural purification in polluted waters which are now in progress in the Cincinnati laboratory mark a definite stage of progress in a research which has been pursued continuously since 1913. The first necessary step in this study was to ascertain, with such precision as practicable, the rates of purification actually taking place in natural streams. As regards reduction in numbers of sewage bacteria and the biological oxidation of organic matter, these rates have now been fairly well established by intensive studies of the Potomac, Ohio, Illinois, and Mississippi Rivers. The next step, obviously, has been to reproduce these same changes in the laboratory, under experimental conditions which may be varied at will, thus permitting more effective study of the influence of separate variables.

Bacterial death rates.—In experimental studies of bacterial purification, which have been pursued in the Cincinnati laboratory for some years, the primary obstacle encountered has been that, under experimental conditions as established in the laboratory, the bacterial changes observed in polluted waters did not parallel those observed in the river from which the samples were taken. All attempts to overcome this difficulty by varying the experimental conditions failed, until finally it was decided, by advice of the consultants in stream-pollution investigations, to simulate natural conditions more closely by constructing a series of artificial channels, through which river water could be kept constantly flowing. An experimental plant was therefore constructed, consisting of a series of channels supplied with water pumped from the Ohio River, which is near by. This plant was first put into operation in a preliminary way during the summer of 1926, and it was found that the purification which was observed paralleled, in a general way, the observations previously made in the river, indicating that the device was suitable for experimental purposes. As the plant is exposed, it could not be operated during the winter, owing to freezing; but during the spring and summer of 1927 it has been operated regularly upon a schedule which provides for systematic variation of conditions presumably affecting the rate of purification. If the observations prove, on final analysis, to parallel those in natural streams as closely as they now appear to do, more extensive series of observations will be made hereafter.

Biological oxidation.—Other than bacteriological determinations, the measure of sewage pollution which appears to be most generally useful is determination of the "biological oxygen demand"—that is, the amount of oxygen required for oxidation (to a certain stage) of the unstable organic matter which is characteristic of sewage; and ever since the establishment of the Cincinnati laboratory, in 1913, much attention has been paid to the study of this reaction.

During the past year Chemist E. J. Theriault has prepared and submitted for publication a monograph[27] on the subject, including (1) a critical review of contributions to the subject since 1870, (2) an account of recent experimental studies at the Cincinnati laboratory, and (3) appendixes dealing with technical methods.

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[27] Public Health Bulletin No. 173.

Extending the studies reported in this monograph, Mr. Theriault, in collaboration with Bacteriologist C. T. Butterfield and Biologist W. C. Purdy, has been conducting a series of experiments during the past year, using a simplified "artificial sewage," inoculated with pure and mixed cultures of bacteria with and without the addition of bacteria-eating plankton. This work, which is still in its early stages, has already shown that certain plankton forms bear an important relation to the biological reactions which take place, and in several other respects has contributed to a better understanding of the complex processes involved in oxidation. Also, a distinct advance has been made during the last few months in the development of improved technical methods which permit of observations under a wider range of experimental conditions more closely resembling those observed in nature.

Collateral experiments.—In connection with the above-mentioned systematic observations on bacterial purification and biological oxidation, it has been necessary to make a number of collateral investigations of intimately related problems in bacteriology, chemistry, and biology. Thus Mr. Butterfield has made studies of the growth rates and limiting numbers of bacteria in various liquid media and of the relation of bacteriophage to bacterial death rates and biological oxidation. In limnobiology, Mr. Purdy and Technical Assistant M. S. Foreman have devoted considerable study to the ecology of various plankton forms and to methods for isolating and propagating cultures of the plankton used in experimental studies of biological oxidation.

STUDIES OF THE EFFICIENCY OF ARTIFICIAL PURIFICATION OF WATER SUPPLIES

Collective and experimental studies of certain methods for the artificial purification of water supplies have been continued under the direction of Sanitary Engineer H. W. Streeter, with the advice and active cooperation of Special Consultant Joseph W. Ellms, of Cleveland.

The purpose of these studies, which were begun in 1924, is to define more exactly the efficiency, potentialities, and limitations of the methods which are commonly used in this country for the purification of water supplies taken from polluted sources. The study has been concerned chiefly with purification by rapid sand filtration and chlorination, as these are the processes most widely used in the United States. Also, because of the obvious relation to administrative policies for controlling the pollution of streams used as sources of water supply, attention has been directed especially to ascertaining the limits of raw water pollution which are consistent with the production of acceptable effluents.

The first undertaking in this program of investigation was a study of the actual efficiency of a number of municipal plants which cooperated by supplying detailed records of their operation and results for periods of one year or more. This study, based upon data collected chiefly during the fiscal years 1924 and 1925, has been brought to a close during the past year by completion of a detailed report[28] which is now in press.

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[28] Public Health Bulletin No. 172.

As an extension of this study, an experimental rapid sand filtration plant, located at the Cincinnati laboratory, has been in operation since the summer of 1924 on a systematic schedule, which provides for observations of its efficiency under conditions which are varied to cover a wide range of differences in pollution of the raw water and in details of plant operation. A description of the plant [29] and two progress reports [29] on experimental observations have been prepared during the past year. The most important single conclusion derived from the data presented in these preliminary reports is that the experimental plant, though of small size, has about the same bacterial efficiency as is shown by large municipal plants under similar conditions of operation and raw water pollution. This indicates that the plant is well adapted for testing the value of many proposed modifications of treatment processes, thus pointing the way to changes which large plants may adopt with advantage. Also conditions which are encountered only temporarily in large plants, as, for instance, excessive pollution of the raw water, may be maintained in this experimental plant long enough for study.

As significant data from such tests are accumulated, further progress reports will be submitted from time to time, making a connected series of reports, each dealing with some one phase of the general subject.

Since the collective study previously made referred principally to plants using river water, it has been deemed advisable to supplement it with a similar study of the operation and efficiency of a representative group of municipal plants taking their raw water from the Great Lakes, where physical and biological conditions affecting the processes of purification differ materially from those encountered in streams like the Ohio River. In pursuance of this plan, in which the authorities of certain Great Lakes cities have offered their full cooperation, a preliminary survey of municipal water purification plants was undertaken in June, 1927, for the purpose of selecting the plants most suitable for study. At the close of the fiscal year this survey had not been completed, but it had progressed far enough to demonstrate that sufficient records were available to warrant undertaking the proposed study, which is now in process of organization.

In both the collective and the experimental studies which have been described, the service has had the active cooperation of State sanitary engineering bureaus and municipal waterworks officials, and has kept in close touch with them through their technical societies as well as through consultation with numerous individuals. This has been extremely helpful as pointing out for study the particular problems with which administrative authorities and plant operators are confronted, and the investigations undertaken have been planned always with a view especially to solution of the practical problems which have been thus indicated.

MISCELLANEOUS ACTIVITIES

In addition to the systematic studies which have been described, for which plans are made in advance, the personnel of the Cincinnati laboratory have been called upon from time to time for a variety of special services, mostly in the way of cooperation with other agencies engaged in research or administrative work along lines related to stream pollution. These special duties have included the following:

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[29] Public Health Reports, Oct. 1, 1926 (Reprint No. 1114) (2 papers), and Public Health Reports, July 15, 1927 (Reprint No. 1170).

In compliance with special requests the personnel of this station have conferred with national officers of the Izaak Walton League of America relative to plans for a nation-wide survey of stream pollution; with the State sanitary engineering personnel of Pennsylvania regarding the disposal of tannery wastes; with the State Board of Health of North Carolina on certain water-supply problems; with a committee of the American Public Health Association in the development and testing of bacteriological methods for the examination of water; and at the request of the Veterans' Bureau a bacteriologist was detailed to investigate the alleged pollution of the water supply of the veterans' hospital at Maywood, Ill.

Sanitary Engineer H. W. Streeter was granted leave, during the summer of 1926, to visit Great Britain on an interchange of sanitary engineers under the auspices of the League of Nations and the British Ministry of Health, and was assigned thereafter to visit certain British cities for study of some phases of sanitary engineering practice. Upon his return he submitted a report on municipal sanitary engineering practice in Great Britain, which has been published.[30] He was also assigned, during the year, to confer with the State Board of Health of North Carolina on certain water-supply problems.

Mr. Theriault has submitted for publication a paper describing a simplified test for free chlorine in water and has cooperated in studies of tannery wastes conducted under the auspices of the Pennsylvania State Department of Health.

In addition, the personnel of the station have cooperated with a number of State and municipal authorities by giving brief courses of instruction in technical methods to several technical employees of State and city laboratories and by furnishing technical advice in reply to many inquiries referred through the bureau. It will thus be apparent that those engaged in stream-pollution investigations, though occupied principally with rather broad research, have been kept in constant close touch with State and municipal administrative authorities, and have thus been brought into more or less direct relation to a variety of specific local problems in the study and control of stream pollution.

Hygienic Laboratory

Surg. G. W. McCoy was continued as director of the Hygienic Laboratory and Surg. R. E. Dyer as assistant director.

Four Hygienic Laboratory Bulletins have been issued. In addition to the bulletins, a number of professional papers pertaining to the work of the laboratory were published by members of the staff in the Public Health Reports and in other scientific journals from time to time throughout the year.

During the fiscal year 1927, 673 bound volumes, acquired by purchase or gift, have been added to the library, bringing the total number of accessions to 12,850. Approximately 2,000 Library of Congress cards, in addition to numerous manuscript cards, were added to the catalogues. There were 1,150 books and periodicals borrowed from, and 144 books and periodicals loaned to, other libraries and individuals. The pamphlet collection has also received many additions. About 240 current periodicals are being received in the library, as well as some 60 reports, bulletins, and other publications from State and municipal health departments.

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[30] Public Health Bulletin No. 166.

DIVISION OF PATHOLOGY AND BACTERIOLOGY

The work of this division is considered below under the headings of nutritional diseases, infectious diseases, biological products, pathology, and nueropsychiatry.

STUDIES OF NUTRITIONAL DISEASES

Investigations have been carried on by Surg. Joseph Goldberger and his associate, Passed Asst. Surg. L. M. Rogers. The studies have been concerned chiefly with attempts at the production of pellagralike conditions in laboratory animals by the feeding of special diets, and the treatment of such conditions by modifications of the diet. Further details are to be found in the report of the officer in charge of field studies in nutrition.

STUDIES OF INFECTIOUS DISEASES

Tularaemia.—Researches carried on during the year by Surg. Edward Francis have established the following: (1) Human cases of tularaemia have been recognized in 10 States hitherto not included in the area of geographic distribution, which now comprises 34 States, the District of Columbia, and Japan; (2) fatalities have been reported which increase the total number of deaths to 15 among about 400 reported cases; (3) a study of the pathology of the disease in 11 human cases has emphasized the seriousness of the disease in man because the character of the human lesions is that of the so-called chronic granulomata, being notably similar to tuberculosis; (4) in addition to the wood tick (*Dermacentor andersoni*) of the Northwest, another tick (species undetermined) prevalent in the Southwest has been added to the list of insect transmitters of tularaemia, nine human cases caused by tick bite having been reported from Arkansas, Texas, and Louisiana.

Tuberculosis.—Pathologist William Charles White has continued to devote his efforts to the program of tuberculosis research which is carried forward jointly by the Public Health Service and the National Tuberculosis Association.

Growing out of the Conference on the Standardization of Tuberculin, called by the Surgeon General, to which reference was made in the report of last year, a protein substance from the tubercle bacillus is being prepared which has been shown to have a higher power of producing allergic reactions than any other substance hitherto studied. Those interested in tuberculin work in the United States and in various other countries have agreed to test this substance in its relation to the different tuberculins now on the market.

The study of the chemistry of the tubercle bacillus has progressed rapidly. Large quantities of one strain of the organism have been produced and chemical analysis has followed at Yale University. The biological studies were undertaken at the Rockefeller Institute for Medical Research and at Vanderbilt and Chicago Universities.

The influence of the fractions isolated on cell chemistry has been observed at Cornell University. These analyses of the tubercle bacillus have disclosed new compounds which appear to have specific action on certain cells in the body. This cooperative study indicates that the protein fraction has a specific action on the plasmacyte, and the lipin-phosphatide fraction a specific action on the monocyte.

The analytical chemical research on the human tubercle bacillus has progressed far enough to make it possible to begin a comparative study with other acid-fast organisms.

Certain new studies have been started:

1. The respiration rate of small quantities of living bacilli is being studied in the hope that it will give some indication of the reason for the difference in the virulence of acid-fast organisms.
2. The scope of the study on the chemistry of body cells concerned in tuberculous infection has been enlarged.
   (*a*) An endeavor will be made to determine the difference in the lipin constituents of the cells serving as hosts of the tubercle bacilli especially in comparison with other cells. This work will be coordinated with the chemical studies at Yale University and the microchemical studies at Cornell University.
   (*b*) The microchemistry of cells both in relation to simple chemical compounds and in relation to more complex chemical compounds obtained by analysis of the tubercle bacillus has been started by a research group at Cornell University.

The willingness with which experts in different fields have devoted their efforts to this cooperative study on the problem of tuberculosis merits the sincerest appreciation on the part of all concerned in the solution of this problem.

Undulant (*Malta*) *fever.*—This study is carried on by Associate Bacteriologist A. C. Evans. A number of serums and cultures from cases suspected of being undulant fever were received at the Hygienic Laboratory from different parts of the United States, and a considerable percentage of the cases were found to be infected with *Brucella melitensis.* The agglutinin absorption tests generally show that, unless there has been opportunity for the transmission of infection from goats, the *abortus* variety of the organism is the cause of the disease in man. One interesting and suggestive exception was encountered during the year. A case of undulant fever due to the true *melitensis* variety of *Brucella melitensis* was treated in the hospital at Alexandria, Va. The history pointed to the definite incident when the disease was contracted. The patient, a physician, owned two cows, both of which had recently aborted. In caring for one of them he removed the placenta with his bare hands and some days afterwards noted the first symptoms of his illness. A sample of serum from this cow was examined by means of the agglutinin absorption test, and it was found that the cow, as well as the patient, was infected with the true *melitensis* variety of the organism. Thus it was shown that the type of organism associated with goats may cause contagious abortion in cattle and from them be transmitted to man.

Typhus fever.—Studies of the endemic typhus of the southeastern United States by Passed Asst. Surg. K. F. Maxcy have shown that the disease, though milder, is clinically similar to typhus of the Old World, and that cases develop a positive Weil-Felix reaction. Epidemiological observations suggest that in this country the disease is not conveyed by the louse, but that some other mechanism of transmission exists, and that possibly there is a reservoir of the disease outside of man.

A strain of virus was obtained from a case of typhus in Savannah, Ga. Its pathogenicity for laboratory animals has been studied and compared with a strain of Old World typhus. It has been found that the Savannah virus protects animals against Old World typhus.

In regard to the possible existence of a reservoir of the disease in rodents, it has been established that rats are susceptible to the American virus and that experimentally inoculated animals develop a positive Weil-Felix reaction. About 3 per cent of 1,700 wild Norway rats captured in Savannah showed a positive Weil-Felix reaction. The significance of this last finding is not yet clear.

Vaccination against smallpox.—These studies have been conducted by Surg. Charles Armstrong. Investigations of postvaccinal tetanus were continued, 13 cases having been reported for 1926.

The development of a testicular, bacteria-free, virus was accomplished. This is being studied for ability to retain its potency under varying conditions. This virus gives a confluent "take" on the rabbit after six months at room temperature, and after 10 days at 37.5° C.

Methods of *in vitro* titration of virus were studied and a procedure was developed (complement fixation) which is being compared with *in vivo* methods, and which gives some promise of successful application.

A strain of vaccine virus was propagated from an alastrim case and is now being studied.

Attempts at culture of smallpox virus have thus far been unsuccessful.

Trachoma.—The laboratory investigation, consisting of microscopic and cultural studies, has been continued during the past year by Associate Bacteriologist I. A. Bengtson, working at the branch laboratory at Rolla, Mo.

Microscopic study of smears and sections of conjunctiva from numerous trachoma cases has produced evidence indicating that the Von Prowazek-Halberstaedter epithelial cell inclusions develop from rods of diphtheroidal form and that the "elementary bodies" of Von Prowazek and the "free initial bodies" of Lindner represent pleomorphic forms of the diphtheroidal organisms, though the possibility is not excluded that the "free initial bodies" are spores. All of these forms, including the inclusion bodies, are usually few in number in smears. Sections of conjunctiva in certain cases have shown compact groups of the diphtheroidal organism rather deep down in the conjunctival layer.

The cultural and inoculation studies have been directed toward an investigation of the diphtheroids which are to be found in trachomatous material.

Pneumonia.—The investigations have been continued by Special Expert R. L. Cecil at the branch laboratory at Bellevue Hospital, New York City. These studies have been made possible through the generous cooperation of the hospital and of the Metropolitan Life Insurance Co. of New York.

Studies have been conducted on the relation of blood serum and leukocytes to immunity to the pneumococcus. The indications are that both of these elements of the blood play a part.

Extensive clinical tests have been conducted on a refined and concentrated antipneumococcus serum with results that suggest, but do not prove, that some benefit follows the use of the material in Type I cases.

Epidemic encephalitis.—Associate Bacteriologist A. C. Evans conducted biological studies of material from cases of epidemic encephalitis, using a suitable method for cultivation. A pleomorphic organism can be obtained regularly from blood or spinal fluid taken during life, or from heart blood or brain tissue obtained at necropsy. The exact relation of the organism to encephalitis remains to be determined. The cultures are of great interest in that they seem to show pronounced variation—so pronounced that what may be regarded as different stages seem to appear as wholly different bacterial forms. Further studies on the organism and the disease it produces in experimental animals are in progress.

Rocky Mountain spotted fever.—A full report of the investigations on this subject as conducted at the special laboratory at Hamilton, Mont., and elsewhere in the West, will be found under field investigations of Rocky Mountain spotted fever.

Control of biologic products.—In October, 1926, the director attended a meeting of the permanent standards committee for the standardization of sera and serological tests of the health section of the League of Nations. The committee decided to establish a new unit for tetanus antitoxin, as it was found impossible to secure agreement on the adoption of any of the existing units. The new unit will be exactly half the strength of the American unit, and the latter unit will continue to be officially recognized only by the United States.

The committee devoted much attention to the status of the standardization of antidysenteric serum. A decision was reached that the antitoxic content of this serum alone would be considered, and that serum of known potency should be distributed to several laboratories for comparative testing in the expectation that definite standards would result from the studies.

The standardization of scarlet-fever streptococcus toxin and antitoxin was discussed in much detail. It was clear that less progress had been made abroad in the testing of these preparations than has been made in this country. A special subcommittee was designated to study the subject further. Surg. R. E. Dyer, assistant director of the laboratory, has been designated by the Surgeon General to represent the Public Health Service in the studies conducted by the subcommittee.

Standardization of tuberculin, antimeningococcic, antipneumococcic, and antianthrax serums was discussed, but it was agreed that, in view of the lack of sufficient data, no steps looking to adoption of standards could be considered at present.

Measles.—Some years ago license was granted for measles convalescent serum (human). During the past year attention has been centered on a serum prepared by treating sheep with special culture media in which it was believed the organism of measles was growing. The evidence developed by Prof. R. Degkwitz, of the University of Greifswald, Germany, and Surg. W. T. Harrison was quite suggestive that the organism of measles could be cultivated as an ultramicroscopic virus, but up to the present time the data on the prophylactic or therapeutic value of the serum are inadequate to warrant recommendation for license.

Antivenin.—A license was recommended for an antiserum capable of neutralizing the venom of the North American rattlesnake. The material was found effective in experimental animals even when administered a short time after the dose of poison had been injected. The field of practical usefulness of the material remains to be determined.

Scarlet fever preparations.—The work on these preparations has been carried on by Surg. R. E. Dyer, assistant director of the laboratory.

A control toxin and a control antitoxin were prepared for distribution. It was thought advisable to use a single strain of the specific organism in the preparation of the control toxin instead of the two strains used in the earlier work. Such a toxin was made and standardized, and distribution has begun.

Three lots of antitoxin were dried and tested by experts especially interested, for the purpose of determining suitability for use as controls in the testing of antitoxins of unknown potency. One of the lots was chosen, the choice being determined by the consistency of results as secured by the several experts in the titration of the antitoxin against a fixed amount of standardized toxin. By these neutralization tests the value of the antitoxin selected was determined, and methods of testing unknown antitoxins, in comparison with this control antitoxin, were worked out. Distribution of the control antitoxin was begun in April, 1927.

At various times during the year assistance has been given the manufacturers in the standardization of fresh lots of antitoxin prepared for the market.

Tests for potency and purity.—The materials tested and the number of tests carried out are indicated in the following tables. These tests were carried out chiefly by or under the direction of Surg. W. T. Harrison and Surg. G. C. Lake.

Action on biological products

Product	Tested for sterility	Tested for potency	Released on manufacturers' protocols
Diphtheria antitoxin	52	62	
Erysipelas streptococcus antitoxin	7		
Scarlet fever streptococcus antitoxin	21	8	27
Tetanus antitoxin	18	19	
Antidysenteric serum	13	13	
Antimeningococcic serum	81	72	
Antipneumococcic serum	29	11	18
Miscellaneous serums	60	2	
Tuberculins	33		
Vaccine virus	[1] 10	5	
Rabies vaccine	21	8	
Miscellaneous vaccines	530		
Typhoid vaccines	53	53	
Diphtheria toxin-antitoxin mixture	207	182	70
Diphtheria toxin for Schick test	12	80	8
Scarlet fever streptococcus toxin for Dick test	11	2	11
Scarlet fever streptococcus toxin for immunization	18	2	11
Pollen extracts	44		
Diphtheria toxoid	1		1
Total	1,221	519	146

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[1] For cultivable (aerobic) organisms per vaccination.

Action on arsphenamine preparations

Product	Tested for toxicity	Tested for potency (trypanocidal)	Released on manufacturer's protocols
Arsphenamine	26	1	28
Neoarsphenamine	247	6	83
Sulpharsphenamine	80	9	11
Silver arsphenamine	8	0	0
Sodium arsphenamine	5	0	0
Other arsenicals	2	0	0
Total	368	16	122

PATHOLOGY

The work under this head has been carried on chiefly by Surg. G. C. Lake with the aid of Passed Asst. Surg. R. D. Lillie. The pathological investigations carried on are chiefly in the nature of services to the various scientific workers in the several divisions of the laboratory, and to clinical staffs of service hospitals at the various ports. The following tabulation indicates the scope and volume of the work carried on:

Examinations chiefly diagnostic

Heads for rabies	29
Urinalysis	82
Tissue:	
Histopathological (diagnosis)	488
Experimental (research)	161
Total	649
Water analyses	15
Wassermanns	1,609
Sera:	
Tularaemia	279
Melitensis	86
Typhus	17
Typhoid	10
Dysentery	1
Total	393
Blood counts	21
Cultures for identification, diphtheria, etc	65
Sputum for tubercle bacilli	5
Feces for dysentery and typhoid	2
Cultures to determine—	
Typhoid carriers	68
Erysipelas carriers	15
Total	83

NEUROPSYCHIATRIC STUDIES

Drug Addiction.—Further studies of drug addiction by Surg. Lawrence Kolb indicated that the incidence of addiction in the United

States has been still further lowered and that the total number of addicts at the present time is between 100,000 and 110,000.

A study of the causes of relapse of cured addicts showed that after addiction of only a few years' duration physical symptoms were relatively unimportant as compared with psychological factors in bringing about a return to opiates, but physical symptoms contributed much to relapse after cure of long-standing addiction, and in some cases these symptoms were more important than the psychological factors.

A special study of a group of medical addicts showed that, while these cases started to take opium for some physical disease, a large proportion of them continued to the point of addiction because of their nervous instability. Sixty-seven per cent were definitely either neurotic or psychopathic before they became addicted, and 70 per cent had a definite nervous heredity.

Course in mental diseases.—During the year seven officers were assigned to the Hygienic Laboratory to receive a course of training in mental diseases under the direction of Surgeon Kolb. The course consisted of lectures, clinical conferences, and examination of psychotic patients at St. Elizabeths Hospital; lectures at the hygienic laboratory; psychometric tests of children at an orphanage; and examination of patients at an institution for the feeble-minded. The purpose of the course was to train the officers for immigration duty in certain foreign countries so that they would be better fitted to detect mental diseases among prospective immigrants.

DIVISION OF ZOOLOGY

Under the direction of Prof. C. W. Stiles the following work has been undertaken by the Division of Zoology.

International Commission on Zoological Nomenclature.—Cooperation with the International Commission on Zoological Nomenclature has continued in the same manner as in preceding years. The various governmental departments have frequently referred questions to the Division of Zoology for opinion.

Bulletins.—Four bulletins have been issued during the fiscal year. and a fifth is practically ready for press.

Bulletin 145, The Nomenclature for Man, the Chimpanzee, the Orang-utan, and the Barbary Ape, endeavors to straighten out the very confused technical names of some of the higher animals, with a special view to standardizing the names of those used in experimental medical and public-health work.

Bulletin 146, Compendium of the Parasites of Mosquitoes (Culicidae), gives the medical relations of the mosquitoes of the world in transmission of disease to man and also records of diseases (of mosquitoes) not transmissible to man.

Bulletin 147, Experimental Bacterial and Chemical Pollution of Wells, via Ground Water, and the Factors Involved, gives the results of extensive studies, lasting several years, at Fort Caswell and Wilmington, N. C.

Bulletin 148, Key-Catalogue of the Crustacea and Arachnoids of Importance in Public Health, is a guide to these two groups of animals in reference to their use as food, their occurrence as parasites of man, and their transmission of disease to man. The manuscript of a similar bulletin on insects has been prepared and will be sent to press early in the fiscal year 1927–28.

Examination of intestinal parasites for diagnosis.—This part of the routine work of the division has been continued throughout the year; specimens have been examined for various Government hospitals, State boards of health, universities, and for practicing physicians.

DIVISION OF PHARMACOLOGY

The work of the Division of Pharmacology was continued under the direction of Prof. Carl Voegtlin.

Chemotherapy of syphilis.—The work on the relative sterilizing power of arsphenamines in experimental syphilis was completed and published. The results indicate that, contrary to the claims of certain German investigators, it is possible to sterilize syphilitic animals even at a far-advanced stage of the disease if the arsenical treatment is sufficiently intensive. This conclusion is of great importance as an experimental basis for the control of syphilis in the human being, emphasizing as it does the necessity of extending the treatment to the limit of tolerance in order to eradicate the disease.

The investigation on the possible advantages of a combined arsenical-thiosulphate treatment was completed and published. It was shown that the trypanocidal and treponemicidal activity of the arsphenamines is not decreased by simultaneous thiosulphate injections. This suggests similar clinical studies with the combined treatment for the purpose of increasing the intensity of the treatment without at the same time running an undue risk of producing toxic reactions.

Further studies were carried out on the theoretically important question of the mechanism of the action of arsenicals. This phase dealt principally with the preparation of compounds of arsenic and of certain heavy metal salts with such tissue constituents as cysteine and glutathione.

Chemotherapy of tuberculosis.—The synthesis of organic gold compounds was completed and some of these are now being studied in comparison with sanocrysin as to their therapeutic action in bovine tuberculosis of rabbits. Among other things, this work will be of value in deciding whether or not sanocrysin has a therapeutic action in experimental tuberculosis.

Cancer studies.—Two papers were published reporting the biochemical differences of normal and tumor tissue with respect to the physiologically important glutathione.

The investigation dealing with tissue growth outside the body has progressed satisfactorily, the strain of tissue having been kept under continuous cultivation for a period of nine months. The alleged specific effect, for stimulating cellular growth, of the addition to the nutritive medium of proteose has been partly confirmed and experiments have been under way to determine whether repeated subcutaneous injections of proteose into rabbits have a similar effect on the tissues of the intact animal.

Relation of smooth muscle tone to oxidation reduction.—In view of the fact that the present knowledge of the control of the tonus of the physiologically very important smooth muscle structures is very rudimentary, an extensive investigation was carried out which has shown that biological oxidation reduction, and particularly the glutathione system, constitutes an important factor in the regulation of tonus.

Treatment of surgical shock.—The studies on this subject, which had been temporarily interrupted, were resumed with a view to furnishing experimental evidence as to the most efficient therapeutic measures for the treatment of this condition. The work is still incompleted, but good progress has been made.

Miscellaneous.—As in previous years, the division continued the informal collaboration with the health committee of the League of Nations in the biological standardization of certain important remedies, particularly the arsphenamines.

The chief of the division on several occasions acted as expert for the Department of Agriculture in the matter of the injuriousness of lead arsenate spray residues in fruit and vegetables.

Numerous samples of drugs were studied as to potency for various official and nonofficial organizations.

Technical opinions on numerous subjects were rendered.

DIVISION OF CHEMISTRY

The Division of Chemistry, under the direction of Prof. W. Mansfield Clark, conducted investigations in the following subjects:

Oxidation-reduction processes.—Investigations by the division in previous years have demonstrated that certain types of organic compounds can lose or gain electrons, and that this type of transformation can be followed by electrical methods of measurement. Of particular interest is the electron exchange resulting in so-called oxidation or reduction and accompanied by coloration or decoloration of dyes which have been used in the study of biological processes. The division has produced a series of these dye systems with graded differences in electron-escaping tendencies and by their use has shown that it is possible to evaluate the intensity with which various organic or biological systems tend to produce reduction. The work of filling in gaps in this series of oxidation-reduction indicators has continued, both by the syntheses of several compounds and their purification as a preliminary to the physical measurements, and by the electrometric study and mathematical analysis of their characteristics. Description of two systems constituted the material for the eleventh paper of the series "Studies on oxidation-reduction." Data for two more are available and await only the final mathematical analysis before publication.

There has previously been reported the preliminary studies of the chlorine electrode made with the hope that they will be useful in a systematic study of chlorine disinfection and water chlorination. The preliminary studies were continued.

In collaboration with Dr. Robert Chambers, of the Cornell University medical school, oxidation-reduction indicators, by means of the micro manipulator, were injected into single cells of *Ameba dubia* and revealed the oxidation-reduction potentials of the living single cell under anaerobic and aerobic conditions.

Previous observations on the Schardinger test for milk were confirmed.

In anticipation of commercial production of the new indicators (now under way), studies of methods of assay and of best production were made.

Incidental to the studies noted above, but having their own intrinsic value, are the new data on the organic compounds used. A study has been made of tests for phenols and five papers on the subject have been published. Included in these is an account of an extremely delicate new test.

Neutral red suitable for vital staining has been produced. A specific test for cysteine has previously been reported. Further work has supported the claim that it is a test of very remarkable specificity. It has been applied in a number of ways during the past year, especially to the reestimation of the cysteine content of foodstuffs used as a source of this nutritionally necessary amino acid. Incidental to these studies was the improvement of a method of hydrolyzing proteins.

Acid-base indicators.—A study of new indicators was completed and the data were published.

Proteolytic enzymes of bacteria.—Numerous details affecting the production of a gelatine liquefying enzyme in synthetic culture media by *Proteus vulgaris* were investigated.

Analysis of arsenicals.—The division has charge of the chemical analysis of arsenicals, the manufacture of which is licensed by the department. In general, a high standard in chemical qualities of these products has been found by the tests of the last fiscal year. On the other hand, improvements in methods of analysis have revealed the fact that the chemistry of certain arsenicals is so little understood that an occasional preparation is of a nature other than that intended and labeled by the manufacturer.

Study of lead hazards.—The division cooperated with the office of industrial hygiene in making a number of analyses of dusts suspected of containing lead and of air in garages using tetraethyl lead. It also analyzed samples of the new silks which are weighted with lead salts in place of tin salts.

Miscellaneous.—Assistance was given to the pellagra studies by analyses of feeding materials, and to mosquito control work by preparation of larvicides. Standard solutions were prepared for other divisions of the service. Some 323 miscellaneous analyses were made. Included in these were tests which necessitated improvements in methods of testing for small quantities of mercury, and for detecting traces of cocaine or strychnine. A member of the division served on the Committee on Warning Agents for Manufactured Gas. Bibliographies on hydrogen ion concentration and anaerobic culture methods were kept up to date, and a bibliography on tests for phenol was published. Numerous memoranda on a variety of subjects were prepared. There was begun a study of waters in localities where mottled teeth occur.

VIRUSES, SERUMS, TOXINS, AND ANALOGOUS PRODUCTS

The law of July 1, 1902, relating to the manufacture, importation, and sale of viruses, serums, toxins, and analogous products has been enforced under the supervision of the director of the Hygienic

Laboratory and under the immediate direction of Surg. W. T. Harrison.

The usual inspections of American establishments were made. European establishments already holding licenses under the law of July 1, 1902, were inspected, together with those applying for original license. While the imports of biological products from abroad are negligible—in fact most of the firms send none of their materials to the United States—there is insistence by the manufacturers on retention of the licenses.

There are at present 50 licensed establishments and 123 different biological products authorized. There are licenses for 16 of the arsphenamine group of products. The studies concerning these products which are carried on at the Hygienic Laboratory are described on pages 74–76.

Miscellaneous

Scientific papers and articles on public-health subjects submitted for publication by the service are reviewed by this division. During the past year this work has included 4 Hygienic Laboratory bulletins, 7 Public Health bulletins, 2 supplements, and 100 articles submitted for the Public Health Reports or outside scientific journals.

The results of the investigations of the scientific research division have been made available to health agencies and the public through the distribution of its publications, conferences with health authorities, addresses at scientific meetings, and by means of correspondence and press articles.

DIVISION OF DOMESTIC (INTERSTATE) QUARANTINE

In charge of Asst. Surg. Gen. W. F. Draper

Plague Suppressive Measures in California

The work carried out in connection with plague suppressive measures in California falls under three divisions as follows:

(*a*) Plague in ground squirrels, and rodent control measures.
(*b*) Rodent surveys and sanitary inspections in San Francisco.
(*c*) Operations of the Public Health Service laboratory.

PLAGUE IN GROUND SQUIRRELS

On account of the limited funds available for field work in connection with the control of ground squirrels it has not been possible to carry on any shooting operations for the purpose of determining the foci of infection. It is believed, however, that the infection still exists in ground squirrels in the area in which it has been previously proved. It was demonstrated in San Benito and San Luis Obispo Counties at the close of the last fiscal year, and it is believed that the measures carried out for the control of rodents have not been sufficiently intensive in any of the counties originally infested to eradicate plague. This continued existence of foci of plague in ground squirrels over a large area in the State of California constitutes a perpetual menace to public health. The present methods of operation will not eradicate plague that exists among the ground squirrels because they are not intensive enough to accomplish this end.

FIELD OPERATIONS FOR CONTROL OF GROUND SQUIRRELS

The activities during the fiscal year have been carried out in the same four counties as in preceding year, viz, Alameda, Contra Costa, San Francisco, and San Mateo. The object has been to eradicate squirrels, as far as possible, near centers of population, in order to prevent dissemination of infection from squirrels to the rat population of these centers. The work in these counties has yielded very satisfactory results, and a decided improvement has been effected by these continued operations in reducing the number of ground squirrels.

In two counties the employees of the San Francisco office have operated in conjunction with the county horticultural commissioner, the agency in charge of county control measures.

In addition to the activities of the service, limited operations are being carried out in some other counties by the horticultural commissioners. These measures, however, are not always continuous and are not sufficient to eradicate plague foci. In order to eradicate plague infection in the ground squirrels of California intensive coordinated effort covering the entire area known to have foci of infection will be necessary. This does not seem possible on account of the expense and the difficulty of securing adequate appropriations for this purpose.

The outlook for the eradication of plague in ground squirrels in California is not hopeful, and in all probability the situation will continue to be as it is at present, other than the control of ground squirrels around centers of population, which the limited service operations has demonstrated to be feasible. The field operations are tabulated as follows:

Number of reinspections	5, 676
Number of acres reinspected	1, 862, 746
Number of acres treated with waste balls	77, 277
Number of acres treated with grain	204, 724
Number of holes treated with carbon bisulphide	446, 378
Material used:	
Number of pounds of poisoned grain	115, 775
Number of gallons carbon bisulphide	7, 786
Number of waste balls used	446, 648
Poisoned barley mixed for private landowners under supervision of employees of the service (number of pounds)	49, 020

The use of calcium cyanide in order to determine its efficiency in the destruction of squirrels, in comparison with the carbon bisulphide, did not yield results which would indicate its use as a major agent in squirrel-control measures. In fact, it has been demonstrated to be inferior to carbon bisulphide, and consequently no extensive use has been made of this agent during the year.

MEASURES TAKEN AGAINST RATS

A rodent survey has been continuous in San Francisco for several years, and during the past year the same force was employed in rat-trapping operations—two Federal employees and four city employees. At the request of the health officer of San Francisco the work has been continued under the direction of the Public Health Service. Rats caught have been examined at the Public Health Service laboratory in San Francisco. The classification of these rats is shown on the tabulated statement dealing with laboratory activities.

During the year there have been approximately 1,600 traps in continuous operation, and the number of rats caught in San Francisco has been 35,760. The results of the survey have been very satisfactory, and a fair sample of the rat population has been obtained. This work is of great value to a city and has been maintained at a cost of about $7,000 in city funds and the salary of two Federal employees.

RAT SURVEY IN OAKLAND AND EAST BAY CITIES

A limited number of city trappers have been on duty in Oakland during the year, and the rats caught have been examined in the Public Health Service laboratory in San Francisco. The numbers are shown under the laboratory report.

It will be noted that the number of *Mus rattus* and *Mus alexandrinus* caught in Oakland and East Bay communities is comparatively small in proportion to the *Mus norvegicus*, and this comparison with the different species of rats caught in San Francisco indicates that San Francisco is much more satisfactorily rat proof against the ground rats than the East Bay cities.

San Francisco probably has a larger percentage of rat-proof buildings than most other seaports in the country. This has been brought about by the intensive campaign of 1907 and 1908 and the continuous operations since that period—condemnation and rat proofing of infested harborages and insanitary premises.

Work of this character is shown below:

Number of premises inspected	5,396
Number of nuisances abated	1,099
Number of complaints investigated	1,532
Number of garbage cans installed	482
Number of premises cleaned of rubbish	117
Number of floors torn up	145
Buildings destroyed	123

Measures taken for the permanent rat proofing of old buildings, including food places:

Number of buildings rat proofed by concreting	120
Basements concreted (square feet, 6,300)	2
Floors concreted (square feet, 211,095)	128
Total area concrete laid (square feet)	217,395
Total area walls installed (cubic feet, 3,640)	11
Number floors rat proofed with double floors and wire cloth between (square feet, 1,840)	1

It will be noted that there has been a diminution in the number of inspections reported, because the two city employees who formerly made reports to this office now transmit them direct to the city health department. Supervisory action is taken by this office, through the chief sanitary inspector, on matters pertaining to rat proofing, in cooperation with the city health department.

SANITARY INSPECTIONS IN SAN FRANCISCO

The sanitary inspections in San Francisco are of complaints referred from the city health department and from other sources. It will be noted that the number of rat complaints is considerably larger than during the preceding year.

Rat complaints	1,147
Garbage and defective garbage cans	4
Rubbish complaints	127
Insanitary premises	209
Stench complaints	11
Miscellaneous	34

NOTE.—All the above complaints were investigated by the inspectors, the necessary notices prepared and sent out, and reinspections made to determine whether the existing nuisances were abated.

Condemnation proceedings

Number of buildings submitted to board of health for condemnation	176
Number of buildings acted on by board of health and condemned	109
Number of buildings acted on by board of health and not condemned	67
Number of buildings abated following condemnation proceedings—by repair 2; by demolition 123	[31] 125
Number of buildings condemned and remaining unabated	59

OPERATION OF PUBLIC HEALTH SERVICE LABORATORY

The activities of the laboratory have included the routine examination of rodents for the determination of the presence of plague infection, together with special clinical microscopical examinations and investigations of diseases which may affect man.

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[31] These include some buildings acted upon during previous years; hence totals will not balance.

Examinations for the presence of plague have been made daily on rats trapped and collected in San Francisco and the East Bay cities. A few other rodents were examined which were collected in rural districts. In the course of these examinations a number of rats were found infected with the leprosylike disease. These infected animals were from scattered districts in both San Francisco and the East Bay communities and are further confirmation of the previous establishment that these communities are an enzootic focus of this infection, since infected animals have been found periodically for the past 15 or more years. No plague infection was found in rodents examined during the past year. It is to be noted, however, that a very small number of squirrels were examined.

Clinical, microscopical, bacteriological, and serological examinations were made for stations of the service located in the fifth supervisional district and for stations of the Indian medical service.

Throughout the past six months the staff of the laboratory conducted necropsy investigations and studies in connection with the scientific investigations of the marine hospital at San Francisco, which were made with the primary object of rendering the most efficient medical relief to the beneficiaries of the service.

The staff has cooperated with the Hooper Memorial Foundation and with the department of zoology of the University of California by affording facilities for research and by assisting in the research and by aiding in didactic presentations. Studies were conducted under this cooperation in the infections of rats by members of the typhoid group and in the breeding habits of Norway rats in the wild state.

An outbreak of a disease affecting meadow mice and house mice which were infesting Kern County, Calif., was studied in cooperation with the United States Biological Survey and the California State horticultural and veterinary departments. The disease was found to be that of mouse septicemia or swine erysipelas, and because of the possibility of its importance as a disease affecting man the results of the study were made the subject of a special report.

Experimental investigations in plague have been continued in an effort to determine whether different rodent strains of *B. pestis* have a selective action in the causation of pneumonic plague. Continued attempts have also been made, apparently with successful results, to establish infection with the leprosylike disease of rats, in white rats. These experiments have been made because of the possibility that a continuous source of this disease may afford material for studies of value in relation to human leprosy.

It is believed that the facilities of the laboratory could be used to a greater advantage to the service if more of the relief stations submitted material which should be examined by clinical-microscopical methods. It is, it seems, also generally conceded by the field officers affected, that the service needs the physical properties, equipment, and organization of a laboratory at such a geographical point as could better and more promptly serve the stations of the Pacific slope and the Mountain States.

Classification of rats

Rats from San Francisco:	
Mus norvegicus	28, 029
Mus rattus	3, 697
Mus alexandrinus	4, 034
Total	35, 760
Rats from fumigated ships:	
Mus norvegicus	5
Mus rattus	829
Mus alexandrinus	1, 255
Total	2, 089

Rats from East Bay cities:	
Mus norvegicus	7, 802
Mus rattus	145
Mus alexandrinus	282
Total	8, 229

Summary of laboratory operations

	Received	Examined
Examination of rodents for plague:		
Rats from San Francisco	35, 760	30, 547
Rats from East Bay cities	8, 229	7, 339
Rats from fumigated ships	2, 089	2, 079
Rats from San Francisco piers	131	131
Mice from Kern County	54	54
Ground squirrels	20	20
Total number rodents examined	46, 283	40, 170

Serological examinations:	
Wassermann reactions (blood)	3, 373
Wassermann reactions (spinal fluids)	44
Widals	20
Agglutinations (tularense)	2
Total	3, 439
Bacteriological examinations (culture and microscopic):	
Blood	19
Feces	50
Urine	37
Throat	1
Other body fluids	8
Miscellaneous	54
Water examinations	8
Total	177
Bacteriological examinations with animal inoculations:	
Tuberculosis	10
Rodent plague	9
Experimental	652
Total	671
Histological examinations: Tissues, surgical, and blocks of tissue (necropsies)	526
Necropsies	30
Parasitological examinations	7
Vaccines	3

REPORT ON THE PLAGUE SITUATION IN LOS ANGELES, CALIF.

On June 30, 1926, the Public Health Service withdrew from Los Angeles, leaving the problem of plague control in the hands of the health commission. The last plague-infected rat had been found on

November 6, 1925, and it was assumed that the epizootic had been suppressed.

The repeal of the emergency ordinance in June, 1926, under the authority of which antiplague work had been done, left the health commissioner without legal power and without funds to face the task of plague prevention. Due to a reduction of the city's budget, the expenses of the health department were cut and the entire force of expert trappers was discharged. As stated in last year's report, this action was taken by the city council over the protests of the health authorities and before the work had been completed.

In order to meet the situation, an effort was made to secure the adoption of amendments to the building code which would provide for rat-proof construction in the future with special reference to food stores and restaurants. Although the proposed legislation has had the indorsement of the State and city boards of health, and the backing of the health and sanitation committee of the chamber of commerce, the city council has not as yet taken any action on the question of its adoption. Before closing the plague laboratory in 1926, the medical officer in charge addressed letters to the State and city authorities submitting recommendations for their consideration and stating that cooperation and community efforts were essential for the prevention of a recurrence of the disease. Attention was invited to the need for a permanent rodent division as a branch of the health department and also for the adoption of a better system of garbage collection and disposal.

REAPPEARANCE OF EPIZOOTIC PLAGUE

On September 10, 1926, the council authorized the health commissioner to employ 12 trappers for the purpose of making a survey to determine the extent of rodent infestation and whether or not plague infection had reappeared among the rat population. The trappers were placed in the field and instructed to collect rodents at San Pedro Harbor and in the metropolitan and other districts of the city. On December 11, 1926, exactly one year one month and five days after finding the last plague rat in 1925, an infected Norway rat was trapped in a garage at 3502 South Main Street. Since that date two additional infected rats have been found, one in January and another in March, 1927. During the period from November 1, 1925, to December 11, 1926, a total of 75,394 rodents (mostly *M. norvegicus*) were collected and examined without results, although intensive trapping was carried out by experienced men in districts which had formerly yielded the greatest number of infected rodents. The factors that govern the periods of dormancy of epizootic plague among Los Angeles rodents are not thoroughly understood, but it is assumed that the scarcity of rodents and fleas following the eradicative campaign of 1925–26 would account for the long interval between cases.

Among the observations made during the year the following may be mentioned as of more than passing interest:

1. That laboratory findings in the examination of 75,000 rodents may not furnish a reliable index of local conditions as regards epizootic plague.
2. That a quiescent period of 12 months occurring in the course of epizootic plague is no assurance that infection has been eradicated.

3. That rat-proofing kills off the ground rat, and the extent and quality of such work are reflected in a continued low catch of *M. norvegicus* and a high incidence of *M. musculus.*

Report of the rodent division of the Los Angeles Department of Health for the fiscal year ended June 30, 1927

Total number rats collected since Sept. 13, 1926	22,612
Total number mice collected since Sept. 13, 1926	15,369
Total number ground squirrels collected since Sept. 13, 1926	409
Total number rats examined in laboratory since Sept. 13, 1926	20,578
Total number found plague-infected	3
Total number rodent nuisances investigated	1,694
Total number rat nuisances abated	1,547
Total number ships inspected	861
Total number poison baits distributed	161,500
Number of cases of human plague	0

In accordance with the provisions of an old ordinance regulating tenement houses, lodging houses, hotels, and apartment houses, the health commissioner authorized the rodent division to serve notices to abate nuisances upon owners and agents of all buildings in which rat infestation could be shown. The order contemplates extensive repairs, or rat-proofing work, wherever it may be required. Poisoning operations have been carried out by the trapping force in junk yards, on refuse dumps, river beds, and in the vicinity of infected foci.

A bacteriological laboratory is maintained at 116 Temple Street, where all rodents are examined for evidence of plague infection.

PLAGUE CONTROL WORK IN THE COUNTY

Nine trappers and poisoners have been employed in Los Angeles County since January, 1927. The county health officer states that his men have trapped in Vernon, Belvedere, El Monte, Puente, and Playa Del Rey, but that so far no plague infection has been found in man or rat. Special attention was paid to hog ranches, refuse dumps, dairies, packing and slaughterhouses, and other places in which infestation could be demonstrated. A total of 3,575 rodents was collected during the course of the work.

PLAGUE CONTROL IN ADJOINING COUNTIES

Ground-squirrel eradicative work is being carried on in San Diego and Ventura Counties under the supervision of the county horticultural commissions. The squirrels collected are forwarded to the State laboratory for examination. No plague infection in man or rodent has been found in these localities.

Plague Suppressive Measures at Relief Station No. 329, Seattle, Wash.

Following the active antiplague campaign which was undertaken by the Public Health Service in cooperation with the city health department of Seattle in 1913 and continued for about seven years, it was deemed wise to continue cooperative plague suppressive measures in this port, according to the same general program, but with reduced personnel and less expense to the cooperating agencies. Since 1920 the city of Seattle has made a yearly appropriation of $7,500 to the city health department for the specific purpose of rat extermination, with the understanding that the work would be conducted under the supervision of the United States Public Health Service. This appropriation has been expended for salaries of five trappers, for traps, bait, and poison. The Public Health Service has furnished one sanitary inspector who assists in this work. He has been placed in charge of the rat laboratory, and in addition to other duties performs all rat autopsies.

Plague suppressive measures at this port during the past seven years have consisted almost entirely of rodent extermination. The city is divided into five zones with one trapper in charge of each zone. About 600 traps are in daily use and the average number of rodents exterminated yearly has been approximately 17,500. In addition to trapping, approximately 500 pounds of poisoned grain have been employed each year in poisoning the 10 city dumps, or sanitary fills, and 9 blocks around the city markets. Every morning the trappers report at the office, their duties are outlined, and reports are received; then they proceed to make their daily rounds of the traps in their respective zones. All rats trapped are tagged when caught and carried to the laboratory for examination at the end of the day's work. The rats which are turned into the laboratory at night are examined the following morning. During the fiscal year 11,867 rats were examined. No plague-infected or suspicious rat was encountered.

The following statistical report covers the cooperative plague suppressive measures conducted in the city of Seattle during the year:

Laboratory operations

Rats trapped and killed	14,589
Dead rats received	45
Rats collected after fumigation and examined	1.296
Rats examined for plague infection	11,867
Rats proved plague infected	0
Blocks poisoned	9
Poison distributed, pounds	480
Sanitary fills poisoned and repoisoned	10
Rats collected after fumigation and sent to laboratory for classification	1.511

Classification of rodents

Mus rattus	690
Mus alexandrinus	2.568
Mus musculus	2,468
Mus norvegicus	10,419
Average number of traps in use daily	610

TRACHOMA ERADICATION WORK

At the beginning of the fiscal year 1927 three trachoma hospitals were in operation at the following places: Knoxville, Tenn., Russellville, Ark., and Rolla, Mo. The building at Richmond, Ky., offered to the service by the State medical society was put in condition for use as a trachoma hospital and this hospital was opened October 20, 1926.

Richmond, Ky.—This hospital, known locally as the Irvine-McDowell Memorial, makes trachoma treatment available to an enormous area in eastern Kentucky where trachoma is still quite prevalent. Certain counties have become almost trachoma free, but in others the spread of the disease seems not to have ceased. This hospital is well equipped and can care for about 30 patients. On the day the hospital was opened a man was admitted who had been unable to work for three years on account of defective vision from trachoma. He had a wife and four children, the youngest of whom he had never seen. He was led into the hospital by a friend, and was for all practical purposes completely blind. After three months' treatment he returned home with good working vision and when last heard from was earning $100 per week as an expert machinist. This illustrates not only the humanitarian but the economic value of this work. While this is one of the more spectacular cases, many have been restored to economic usefulness to an extent that was surprising both to the patients and their families.

Knoxville, Tenn.—Trachoma in Tennessee is markedly prevalent only in the eastern half of the State. The Public Health Service has been engaged in antitrachoma work in the State since 1916. The disease seems to have decreased both in severity and in number of cases during that period. The construction of good roads through east Tennessee has put the hospital within reach of a large area, and many persons are able on account of the improved transportation to receive clinic treatment, coming to the hospital several times a week, who would formerly have been compelled to stay in the hospital or go without treatment. By this means it is possible to treat a greater number of people without increased cost. Knoxville is the center of a number of highways, bus lines, and railroads. An automobile has been furnished by the State health department which will greatly facilitate the field work which is conducted by the hospital staff.

Russellville, Ark.—While this hospital is conducted in a building capable of housing but 15 patients, it has nevertheless done a notable work. The hospital has been practically full all the time. Several field clinics have been held, resulting in the finding of localities in which trachoma is unusually prevalent.

A particular virulent form of trachoma is prevalent in many parts of Arkansas. Cases have been treated at Russellville from all parts of the State except the extreme southwest. The work of eradication in this State is only begun. One family of eight were admitted to the hospital at one time, all suffering from trachoma. It is not hard to see how the disease might spread from this family to their associates if allowed to go untreated. By active treatment these persons were changed from active spreaders of trachoma to what we believe to be a noninfective condition. A great deal of this sort of work will have to be done before the disease is checked. It is hoped in the near future to relocate this hospital at Little Rock in a building capable of accommodating from 35 to 50 patients.

Rolla, Mo.—The extension of the State highway system has made Rolla accessible to the people of a number of counties in southern

Missouri where trachoma is most prevalent. Bus lines now pass through the town in all directions. On this account the location of the hospital at Rolla is even more fortunate than four years ago when the hospital was opened. The good roads not only make it possible for more people to get to the hospital but enable the hospital staff to get out for field work without undue loss of time en route.

Studies are being undertaken at this hospital to determine the value of several suggested modes of treatment. Efforts are also being made to develop more exact criteria of diagnosis in early trachoma. It is hoped that study of the pathology of the eyeball in trachoma by means of the corneal microscope recently purchased may give information that will aid in diagnosis and treatment.

Laboratory.—Associate Bacteriologist Ida A. Bengtson is continuing her work on the etiology of trachoma. The Missouri School of Mines and Metallurgy has furnished laboratory space for this work and is now constructing a brick building designed to house the experimental animals used by our laboratory. Financial assistance toward this construction was given by the National Committee for the Prevention of Blindness.

Research laboratory—Trachoma.—The laboratory investigation, consisting of microscopic and cultural studies, has been continued during the past year. Microscopic study of smears and sections of conjunctiva from a number of trachoma cases has produced evidence to the effect that the von Prowazek-Halberstaedter epithelial cell inclusions develop from rods possibly of diphtheroidal structure and that the "elementary bodies" of von Prowazek and the "free initial bodies" of Lindner represent pleomorphic forms of the rod form. All of these forms, including the inclusion bodies, are usually few in number in smears. Sections of conjunctiva in certain cases have shown compact groups of the organism rather deep in the conjunctival layer.

The cultural studies have been directed toward an investigation of the various bacilliform organisms which are to be found in trachomatous material. This study has involved the use of skin tests, agglutination tests, vaccine and serum treatment (by instillation into conjunctival sac) of patients, and animal inoculations in order to obtain evidence of the relationship of the organisms isolated to the disease. This work is still in progress.

Epidemiology.—Asst. Surg. A. S. Rumreich is still engaged in the collection of data regarding environmental factors affecting trachoma patients. This study has not progressed to a point where definite statements can be made.

General.—In addition to treatment, the education of our patients at all the hospitals in personal hygiene has been proved to be an essential factor in preventing infection. This educative work is also done at the field clinics, but mainly in the hospitals, where it is a part of the daily routine.

State health officials who are cooperating with the service in antitrachoma work are agreed that all phases of our campaign, especially that of health education, have been of great value in facilitating general public-health work.

A statistical statement of hospital and dispensary transactions during the year follows:

Dispensary and hospital relief, operations, etc.

	Knoxville, Tenn.	Richmond, Ky.[1]	Rolla, Mo.	Russellville, Ark.	Total
DISPENSARY RELIEF					
Old cases, all causes	1,858	310	1,019	1,108	4,295
Old cases, trachoma	1,687	255	810	884	3,636
New cases, all causes	417	223	378	620	1,438
New cases, trachoma	131	111	187	132	561
Total attendance	2,375	633	1,409	1,746	6,163
Total number of treatments	2,307	699	1,606	1,975	6,587
Average daily attendance	6.506	8.79	3.86	4.83	....
Impaired vision from trachoma	82	101	229	101	513
Corneal opacity from trachoma	15	68	137	50	270
Blindness both eyes from trachoma	0	0	1	1	2
Blindness 1 eye from trachoma	0	2	16	2	20
Ulcer from trachoma	18	14	31	12	65
Pannus from trachoma	22	99	198	79	398
Entropion from trachoma	10	37	76	39	162
Trichiasis from trachoma	6	30	67	40	143
Photophobia from trachoma	84	95	206	85	470
Conjunctivitis	160	66	217	251	694
Glaucoma	1	2	2	11	16
Trachoma cases cured [2]	7	0	1	2	10
HOSPITAL RELIEF					
Remaining from previous year	21	0	19	12	52
Admitted during the year	183	115	187	164	649
Discharged during the year	186	102	188	176	652
Remaining at close of year	18	13	18	0	49
Days' relief furnished	6,216	2,767	5,427	3,958	18,368
Rations furnished	8,066	4,683	7,804	5,686	26,239
Cost of rations	$3,267.78	$2,309.37	$3,722.17	$2,722.85	$12,022.17
OPERATIONS					
General anesthesia	0	1	2	3	6
Local anesthesia	166	71	192	155	584
Grattage	156	55	70	74	355
Entropion	6	17	154	47	224
Canthoplasty	2	1	66	9	78
Pterygium	2	0	2	4	8
Massage	0	0	0	14	14
Canthotomy	0	0	0	3	3
Cautery puncture	0	0	2	2	4
Enucleation	0	0	1	1	2
Tarsectomy	0	0	0	1	1

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[1] Opened Oct. 20, 1926.

[2] Hospital cases which have been reexamined and found cured. It is impossible to determine with any degree of accuracy the total number cured, since it is difficult to see and examine many of them once they are discharged from hospital for home treatment.

Educational work, house-to-house visits, etc.

	Knoxville, Tenn.	Richmond, Ky.	Rolla, Mo.	Russellville, Ark.	Total
Public talks given	0	8	0	20	28
Persons (estimated) in audiences	0	860	0	1,900	2,760
Pamphlets on trachoma distributed	33	0	105	382	520
House-to-house visits	26	0	0	1	27
Persons in houses visited	88	0	0	6	94
Trachoma cases in houses visited	21	0	0	5	26
Schools visited	2	0	1	12	15
Pupils examined in schools	617	0	15	1,411	2,043
Trachoma cases in schools	13	0	3	4	20

Field clinics

	Missouri	Arkansas	Total
Number of clinics held	7	4	11
Number of persons examined	443	250	693
Trachoma cases found	110	68	178
Suspicious cases found	23	8	31
Operations performed	29	2	31
General anesthetic	....	1	1
Local anesthetic	29	1	30
Physicians present	34	42	76

SUPERVISION OF WATER SUPPLIES USED BY COMMON CARRIERS

During the year no difficulties have been encountered in carrying out the plan for investigating and certifying water supplies used for drinking and culinary purposes on interstate carriers in conjunction with State health departments. Direct activities of service personnel in States in connection with this cooperative arrangement is on the decline, and as long as State health departments increase their personnel and activities this decline will continue. Major assistance for the purpose of inspecting water supplies was given to only six States, namely, Arkansas, Missouri, Nevada, North Dakota, Oklahoma, and Texas. In addition to these States special assistance on particular problems was given in Arizona, California, Iowa, Montana, and Oregon.

Of particular interest is the cooperative work being done for other governmental services. As in the past, the sanitary engineering work in national parks has been done by this division; complete surveys of water supplies on five Indian reservations were made upon the request of the Office of Indian Affairs; one investigation for a sewerage system, together with a sewage-treatment plant, was made and reported upon for the Coast Guard; one water-supply problem was handled for the Veterans' Bureau; three special inspection trips, one covering a period of three weeks, were completed with Forest Service representatives; and one investigation of a water-supply system was made for another division of this service. It is thought that such cooperative work for other departments or services should be encouraged in order that full utilization of our personnel may be made in all cases where it would be to the advantage of the Government.

INTERSTATE RAILROAD WATER SUPPLIES

The following table, covering the calendar year 1926, gives the status of this work in each State.

Railroad supplies for calendar year 1926

State	Source classification				Certification status				Per cent sources acted upon
	Public [1]	Private [2]	Railroad	Total	Satisfactory	Prohibited	Provisional	Action pending	
Alabama	34	2	2	38	38	0	0	0	100
Arizona	13	2	11	26	11	0	0	15	42
Arkansas	39	10	17	66	20	0	1	45	32
California	51	18	35	104	5	0	0	99	5
Colorado	28	3	10	41	20	4	10	7	83
Connecticut	23	0	0	23	20	0	3	0	100
Delaware	6	0	0	6	6	0	0	0	100
District of Columbia	1	0	0	1	1	0	0	0	100
Florida	42	3	8	53	48	1	0	4	92
Georgia	54	3	1	58	57	1	0	0	100
Idaho	14	2	10	26	20	2	1	3	88
Illinois	70	5	26	101	66	4	31	0	100
Indiana	55	2	14	71	45	2	5	19	73
Iowa	69	1	20	90	68	2	0	20	78
Kansas	72	2	10	84	78	0	0	6	93
Kentucky	27	8	14	49	40	1	1	8	84
Louisiana	25	11	14	50	39	4	0	6	88
Maine	37	1	6	44	43	0	0	1	98
Maryland	13	1	6	20	14	1	3	2	90
Massachusetts	35	0	0	35	35	0	0	0	100
Michigan	67	6	20	93	93	0	0	0	100

[1] The column headed "Public" includes supplies owned by municipalities as well as those used by municipalities but owned by private companies.

[2] A "Private" supply refers to a small well or spring used only by the carrier and the person owning it.

Railroad supplies for calendar year 1926—Continued

State	Source classification				Certification status				Per cent sources acted upon
	Public	Private	Railroad	Total	Satisfactory	Prohibited	Provisional	Action pending	
Minnesota	42	3	26	71	71	0	0	0	100
Mississippi	31	11	7	49	41	1	0	7	86
Missouri	50	11	14	75	4	0	4	67	11
Montana	20	3	9	32	28	0	0	4	88
Nebraska	37	0	24	61	7	0	0	54	11
Nevada	8	2	9	19	19	0	0	0	100
New Hampshire	19	1	1	21	16	1	0	4	81
New Jersey	36	1	3	40	34	4	2	0	100
New Mexico	8	1	15	24	23	0	1	0	100
New York	96	3	20	119	72	3	11	33	72
North Carolina	58	10	7	75	47	0	10	18	76
North Dakota	18	3	19	40	0	0	0	40	0
Ohio	68	6	17	91	83	4	0	4	96
Oklahoma	42	2	5	49	10	7	14	18	63
Oregon	34	3	8	45	36	1	0	8	82
Pennsylvania	133	7	21	161	71	0	0	90	44
Rhode Island	2	0	1	3	3	0	0	0	100
South Carolina	33	3	1	37	34	0	0	3	92
South Dakota	23	1	11	35	14	0	0	21	40
Tennessee	26	8	10	44	33	1	0	10	77
Texas	104	9	46	159	68	0	43	48	70
Utah	13	3	8	24	18	0	3	3	88
Vermont	13	1	0	14	14	0	0	0	100
Virginia	39	7	3	49	44	0	5	0	100
Washington	32	4	18	54	0	0	0	54	0
West Virginia	24	12	8	44	39	0	5	0	100
Wisconsin	58	19	15	92	80	7	1	4	96
Wyoming	11	2	2	15	12	2	1	0	100
Total	1,853	216	552	2,621	1,688	53	155	725	72

Since the greatest travel takes place from and to the larger cities in the country, and since all of the water supplies of such cities have been approved as being of satisfactory quality, the percentage of travelers safeguarded under this procedure is somewhat larger than the percentage of supplies certified might indicate.

In the last annual report a preliminary statement concerning the completeness of the program of the railroad companies in this country in remodeling or replacing unsatisfactory drinking water coolers on their cars was given. In the Public Health Reports for June 10, 1927, there appeared a final statement on this problem, a portion of which is quoted:

> A consolidation of all the data given by the railroads reporting shows the following:
>
> | | |
> |---|---|
> | Number of cars reportable | 69,414 |
> | Total number of coolers regardless of style of construction on cars | 101,684 |
> | Number of coolers on cars satisfactorily constructed | 97,670 |
> | Number of coolers on cars yet to be constructed satisfactorily | 4,014 |
>
> The incompleted work represented by the total, 4,014, was distributed over 56 railroads in the following manner:
>
> Nine companies, each of which reported over 100 coolers, stated that on their equipment 22,694 coolers were carried, and of these there remained 3,533, or 16 per cent, to be remodeled.
>
> Forty-seven companies, each reporting less than 100 coolers, carried on equipment 5,491 coolers, of which 481, or 9 per cent, still had to be rebuilt. Varying percentages of incompleteness in this work were found up to the maximum, in the case of one company, of 44; but it is obvious that the largest amount of incomplete work can be traced to the group of nine companies mentioned above.
>
> From the above tabulation it would appear that the coolers still to be satisfactorily constructed comprise 3.9 per cent of all those reportable. An analysis of this figure, however, shows that this is not exactly the case. Of the number

reported, 2,684 can be disregarded, since they were on cars which had been retired from active service and which, if ever used again, would need extensive reconditioning, or which since have been reported as having been remodeled. This leaves but 1,330 coolers which, at the date of this writing, have not been reported as having been rebuilt to conform with the provisions of interstate quarantine regulations. This low figure represents 1.3 per cent of the total number of coolers reported as existing on cars operating in interstate traffic. It is believed that inquiry at the present time into the status of the few coolers reported during this survey as not being usable under the interstate quarantine regulations will now show them to have been rebuilt.

Field personnel of the Public Health Service have been making inspections from time to time of coolers on cars in transit or in coach yards, and, with a few exceptions, those found in use were designed satisfactorily. Field work of this character will be continued. In addition, this entire program will be carried on until assurance is had that all common carriers have completed their individual quota of work.

It has been evident in the past that sanitary conditions in coach yards and terminals have had a direct influence on the quality of the water furnished to the traveling public. Therefore, there were made during the year 87 inspections of these particular areas. Corrections were procured wherever possible, and the primary objective—namely, arousing interest in this subject on the part of the railroads—was also attained in many instances. One company thought this problem to be so important that it assigned one man to make a comprehensive study of water supply, coach yard, and terminal sanitation over its entire system. As a result of this inspectional work, it now appears that the American Railway Association will consider this question through a joint committee on which this service will have equal representation with that association's sections and divisions.

INTERSTATE VESSEL WATER SUPPLIES

The investigation and certification of water supplies used by vessel companies operating in interstate traffic are completed in a manner similar to that in force relative to railway water supplies. The following table, covering the calendar year 1926, shows the status of this work by States:

Vessel supplies for calendar year 1926

State	Source classification				Certification status				Per cent sources acted upon
	Public[1]	Private[2]	Company	Total	Satisfactory	Prohibited	Provisional	Action pending	
Alabama	3	0	0	3	3	0	0	0	100
Arkansas	3	0	0	3	2	0	0	1	67
California	27	5	2	34	10	0	0	24	29
Connecticut	8	0	0	8	7	0	1	0	100
Delaware	2	0	0	2	2	0	0	0	100
District of Columbia	1	0	0	1	1	0	0	0	100
Florida	18	5	5	28	0	0	0	28	0
Georgia	4	0	0	4	4	0	0	0	100
Idaho	1	0	0	1	1	0	0	0	100
Illinois	9	3	0	12	10	1	0	1	92
Indiana	7	0	1	8	7	1	0	0	100
Iowa	1	0	0	1	0	0	0	1	0
Kentucky	9	0	0	9	7	0	0	2	78
Louisiana	5	2	3	10	7	0	0	3	70
Maine	11	0	0	11	11	0	0	0	100
Maryland	2	1	1	4	3	0	1	0	100
Massachusetts	11	0	0	11	11	0	0	0	100

[1] The column headed "Public" includes supplies owned by municipalities as well as those used by municipalities but owned by private companies.

[2] "Private" supply refers to a small well or spring used only by the carrier and the person owning it.

Vessel supplies for calendar year 1926—Continued

State	Source classification				Classification status				Per cent sources acted upon
	Public	Private	Company	Total	Satisfactory	Prohibited	Provisional	Action pending	
Michigan	13	0	0	13	13	0	0	0	100
Minnesota	1	0	1	2	2	0	0	0	100
Mississippi	6	2	0	8	5	0	0	3	63
Missouri	4	1	0	5	0	0	1	4	20
New Hampshire	1	0	0	1	1	0	0	0	100
New Jersey	12	0	2	14	13	1	0	0	100
New York	15	2	0	17	10	0	1	6	65
North Carolina	5	2	0	7	0	0	0	7	0
Ohio	15	1	0	16	13	1	0	2	88
Oregon	13	1	0	14	4	0	0	10	29
Pennsylvania	9	1	0	10	3	0	0	7	30
Rhode Island	3	0	0	3	3	0	0	0	100
South Carolina	2	1	2	5	4	1	0	0	100
Tennessee	5	4	0	9	5	0	0	4	56
Texas	4	5	3	12	10	0	0	2	83
Vermont	1	0	0	1	1	0	0	0	100
Virginia	9	2	1	12	12	0	0	0	100
Washington	17	4	1	22	8	0	0	14	36
West Virginia	9	1	0	10	9	1	0	0	100
Wisconsin	1	0	0	1	0	0	0	1	0
Total	267	43	22	332	202	6	4	120	64

SUPERVISION OF WATER-SUPPLY SYSTEMS ON VESSELS

The supervision of vessel water-supply systems has progressed this year, but still there remains more work to be done than has been completed; 587 first inspections and 988 reinspections were made by field personnel. These figures represent an increase over those of other years, which increase can probably be attributed to the employment of temporary inspectors by the field stations during the summer months.

The following table, covering the calendar year 1926, shows the condition of this work:

District	Vessels on active status	Per cent of total vessels in district	Certification[1]			Per cent of district vessels certified	Per cent of total vessels certified
			Permanent	Temporary	Total		
1	793	31.9	116	8	124	15.7	5.0
2	166	6.7	111	6	117	70.4	4.7
3	609	24.6	17	371	388	63.7	15.6
4	522	21.0	28	9	37	7.1	1.5
5 and 6 (combined)	390	15.7	114	0	114	29.2	4.6
Total	2,480	----------	386	394	780	----------	31.4

[1] Only the latest certificate issued on a vessel was counted in case that vessel was both temporarily and permanently certified during the year.

The number of cases of typhoid fever reported as having occurred on vessels engaged in interstate traffic fell from 103 last year to 69 this year. It is thought that some of this decrease was caused by better sanitary conditions on vessels, but it is believed that a portion of it is due to faulty reporting.

The offices of the district engineers continue to receive their review plans of vessels intended for interstate operation. Each field office lays special stress on this function because it eliminates the necessity of revising physical parts of vessels after they are launched and in service.

The Steamboat Inspection Service has cooperated effectively during the year by submitting reports on vessels inspected.

Cooperating laboratories have been extremely generous in their assistance during the year in testing 3,903 samples of water taken directly from vessels. This number of tests is an advance of 797 over last year.

There has been considerable doubt as to the advisability of permitting the storage of drinking and culinary water in tanks of vessels formed in part by the shell of the vessel. In order to ascertain whether or not there was danger in permitting storage in these tanks, the district engineers separately initiated tests for the detection of chlorides. The presence of chlorides above the normal content of the water stored in the tanks would, of course, indicate sea-water contamination. These tests are being continued, and upon the completion of a sufficient number the results will be reviewed for the purpose of arriving at a decision.

Interstate Sanitary Districts

DISTRICT NO. 1—MAINE, NEW HAMPSHIRE, VERMONT, MASSACHUSETTS, RHODE ISLAND, CONNECTICUT, NEW YORK, NEW JERSEY, AND PENNSYLVANIA

Associate Sanitary Engineer E. C. Sullivan has continued in charge of this district. The main activities of this office during the fiscal year may be divided into the following classifications: (1) Supervision of drinking and culinary water supplies on vessels engaged in interstate traffic, including investigations of the general sanitary conditions and detailed inspections of the drinking and culinary water-supply systems of such vessels; (2) supervision of drinking and culinary water supplies used by railroads operating in interstate traffic, including surveys of the general sanitary conditions of the railroad-coach yards and terminals and of the methods employed in the handling of the drinking and culinary water in the coaches and in the coach yards; (3) cooperation with the State health departments located within the district to procure a uniform procedure in the certification of sources of water used for drinking and culinary purposes on interstate carriers, both railroad and vessel, and cooperation in other sanitary-engineering matters; (4) cooperative activities in connection with the control of typhoid-fever cases involving interstate carriers, such as reciprocal reporting with local health departments, United States marine hospitals and quarantine stations, and the subsequent investigation of such cases when necessary; (5) cooperation in shellfish-sanitation activities under the direction of the shellfish-sanitation office of the Public Health Service; (6) collection of data concerning the sources of milk and cream used for drinking and culinary purposes in interstate traffic by vessel and railroad companies; (7) miscellaneous activities concerning the interstate quarantine regulations, such as investigation of anthrax cases, the furnishing of information regarding interstate quarantine matters, and the control of water supplies on motor busses operating in interstate traffic.

VESSEL WATER-SUPPLY AND SANITATION SUPERVISION

Two hundred and two inspections of vessels were made during the fiscal year, 28 of which were of vessels which had not been previously inspected. The vessels inspected in 21 instances were passenger vessels and in the remaining cases the inspections were of freight vessels or water boats engaged in the delivery of water to other vessels. These inspections included the general sanitary conditions of the vessels in addition to the arrangements of the drinking and culinary water-supply systems.

In most of the vessels not previously inspected, it was found that a rearrangement of the tanks, pumps, and distribution systems for the drinking and culinary water-supply systems, so as to be independent of all other water-supply systems of the vessels, was necessary in order to comply with the requirements of the interstate quarantine regulations. Recommendations to that effect were made to the operating companies, and follow-up inspections have been made in order to insure compliance with the requirements.

The annual reinspections of the vessels previously inspected as a rule have indicated the necessity for certain minor changes, such as the replacement of worn-out equipment or the correction of slight irregularities which may have developed, such as the elimination of common drinking cups or the improving of small water coolers so that the drinking water and ice for cooling may be kept entirely separate.

Favorable certificates of inspection were issued for 111 vessels during the year. Seventy of these vessels were passenger carriers and the remaining 41 were freight carriers and water boats. These certificates were issued only after inspections had shown the vessels to be in an entirely satisfactory condition for certification. Temporary certificates of inspection, based upon affidavits signed by the masters of vessels that conditions were in compliance with the requirements of the interstate quarantine regulations, were issued for eight freight vessels desiring such certificates and which it was not possible to inspect at the time application for certification was made.

The cooperation with naval architectural and ship construction companies having headquarters within this district has continued in a satisfactory manner during the year. The plans for several new vessels being constructed within the district were reviewed and recommendations for alterations or additions to the proposed designs of the drinking and culinary water-supply systems were made when necessary. Preliminary conferences have been had with naval architects engaged in the reconditioning of ships, so that the requirements for the drinking and culinary water-supply systems would be provided for during the period of reconstruction. In cooperation with the district engineer in charge of district No. 2, the plans for the S. S. *California*, being constructed within district No. 2 and intended to be operated by the Panama Pacific Line from New York City in coastal traffic to the Pacific coast, were reviewed. Likewise the plans of the Hudson River Day Line steamer *Peter Stuyvesant*, constructed in district No. 2 but intended to be operated within district No. 1, were jointly reviewed.

On several occasions during the year the vessel companies having headquarters within this district and subject to the supervision of this office were furnished with copies of reports which would be of interest to them or were notified of certain unusual conditions to which they should give special attention. An example of this is the notification which was given to the vessel companies early in June that their vessels should not obtain milk or cream at Montreal, Canada, until further notification, due to an excessive prevalence of typhoid fever in that city, believed to be caused by infected milk supplies.

The New York City health department has continued to exercise supervision over local excursion boats and water boats operating in New York Harbor. A sanitary inspector of that department has been detailed from time to time to devote the necessary attention to this work. The laboratory of the United States Marine Hospital No. 70, in New York City, has continued to make bacteriological tests of water samples obtained from the trans-Atlantic vessels of the United States Lines, which is a subsidiary of the United States Shipping Board. Twenty samples were thus analyzed.

Fifty-two cases of typhoid fever involving vessels having headquarters in this district were reported during the fiscal year by United States marine hospitals, United States quarantine stations, and local health departments, particularly the health departments of New York City and Philadelphia, Pa. Eleven of these cases were from vessels operating in interstate traffic and 32 cases were from vessels operating in foreign traffic. Three vessels had more than 1 case reported during the year, the number in each instance being, respectively, 6, 3, and 2. The vessel having the 2 cases was engaged in interstate traffic, while the other two vessels were engaged in foreign traffic and were under foreign registry.

Summary of vessel water-supply supervision

Activity	Passenger	Freight	Total
Inspection:			
First inspection	12	16	28
Reinspection	108	66	174
Certificates issued:			
Temporary	0	8	8
Regular (favorable)	70	41	111
Regular (unfavorable)	0	0	0
Major conferences:			
With shipping officials	----------	----------	21
With others	----------	----------	9
Water analyses:			
At service laboratories	----------	----------	20

Summary of typhoid fever cases

	Fiscal year				
	1923	1924	1925	1926	1927
Cases reported by United States marine hospitals and quarantine stations	47	55	84	30	18
Cases reported by local health departments	30	28	27	21	34
Cases involving passengers	14	16	14	6	6
Cases involving crew	59	67	97	45	46
Foreign-owned vessels involved	21	20	22	14	17
American-owned vessels involved	28	36	72	28	24
United States Shipping Board vessels involved	5	5	5	3	--------
Other Government-owned vessels involved	3	6	5	0	3
Cases involving vessels operating in interstate traffic	18	17	28	25	11
Cases involving vessels operating in foreign traffic	35	49	57	26	32
Vessels having more than one case	6	5	15	5	3
Average number of cases per vessel	1.33	1.24	1.18	1.13	1.18

RAILROAD WATER SUPPLY AND SANITATION SUPERVISION

The methods employed in the handling of the drinking and culinary water supplied to the coaches in various railroad coach yards and terminals were investigated in a number of instances during the fiscal year. The total number of inspections of railroad coach yards were 44, and 28 inspections of terminals were made. The railroads which had coach yards and terminals thus inspected included the Baltimore & Ohio Railroad, the Boston & Albany Railroad, the Buffalo, Rochester & Pittsburgh Railway, the Delaware, Lackawanna & Western Railroad, the Erie Railroad, the Lehigh Valley Railroad, the New York Central Railroad, the New York, Chicago & St. Louis Railroad, the New York, New Haven & Hartford Railroad, the New York, Ontario & Western Railway, and the Philadelphia & Reading Railway. Places where such inspections were made included Albany, N. Y., Boston, Mass., Buffalo, N. Y., Camden, N. J., Hartford, Conn., Jersey City, N. J., New Haven, Conn., New London, Conn., New York, N. Y., Philadelphia, Pa., Providence, R. I., Rensselaer, N. Y., Rochester, N. Y., Springfield, Mass., Syracuse, N. Y., and Utica, N. Y.

Reinspections were made of a number of these coach yards and terminals. Improvements have been noted in accordance with recommendations made as based upon the original inspections. These improvements have included more adequate cleansing of the water coolers, better conditions in the yards, more satisfactory care of the filling hose or buckets used in filling the water coolers and, in some instances, improvements in the arrangement of the yard hydrants.

A considerable number of conferences were had with railroad officials in this work, particularly in regard to obtaining their cooperation for improvements not only in the particular coach yards and terminals inspected, but in other coach yards and terminals coming within their jurisdiction. A considerable amount of time was devoted during the year to the preparation of sketches illustrating various devices of value in the sanitary handling of drinking and culinary water in railroad-coach yards and terminals, and in developing uniform requirements for the sanitation of coach yards and terminals. Several of the railroads have shown increased interest in the problems involved in the sanitary handling of drinking and culinary water in the coach yards and terminals and it is believed that better conditions than now exist eventually will be worked out.

A number of conferences have been had at various times during the year with officials of the State health departments located within the districts concerning matters affecting the certification of sources of water supply used for drinking and culinary purposes by interstate carriers. An effort has been made to become familiar with the problems existing in the various States so that assistance can be rendered whenever necessary.

Summary of railroad water supply supervision

Inspections:	
Coach yards	44
Terminals	28
Major conferences:	
With railroad officials	38
With others (principally health authorities)	11

MISCELLANEOUS ACTIVITIES

At the request of the district director, in cooperation with the New York City health department and the local office of the United States Bureau of Animal Industry, attention was given to a situation arising from the death from anthrax in New York City of a longshoreman who had just previously been employed in the handling of sheep wool and other material susceptible to anthrax infection from a steamship operating in interstate traffic. Arrangements were made by the local office of the Bureau of Animal Industry for the disinfection of certain lots of sheep wool from which anthrax positive samples had been obtained.

Considerable attention was given during the fiscal year to determining whether motor buses operated in interstate traffic within the district had drinking water available for use. To date practically no such vehicles have been encountered in this district which carry drinking water. It is possible and probable, however, that in the course of time such water will be made available aboard these interstate carriers, and in that event it will be necessary for them to comply with the requirements of the interstate quarantine regulations for the sanitary handling of drinking and culinary water.

Assistance was rendered at various times during the year in minor phases of the shellfish sanitation program being carried out by the Public Health Service in cooperation with the State agencies involved.

In order that information may be available as to the status of milk and cream used for drinking or culinary purposes by railroad and vessel companies aboard their conveyances operating in interstate traffic, detailed data were obtained in conjunction with the other interstate sanitary districts as to the dairies and dealers from which the railroad and vessel companies obtained such milk and cream. Thereafter these data were compiled and transmitted to the State health departments or other State agencies concerned for information concerning the kinds of milk and cream handled by the dealers and dairies involved and the State's opinion as to the conditions under which the milk and cream were produced or sold by the dealers and dairies. Upon the receipt of the completed data from the States, a report was prepared transmitting the information thus obtained to the bureau.

Assistance was rendered during the year to United States Marine Hospital No. 43 at Ellis Island, New York, concerning a nuisance from flies and other insects with which the hospital was troubled during the summer months, which is due in part to the location of a cattle-loading pier on the mainland at Jersey City, a short distance away from the hospital. Recommendations covering the situation were made to the hospital authorities.

Several meetings of professional scientific interest, such as that of the American Society of Civil Engineers and other associations, were attended in New York City and in other places in connection with official work.

DISTRICT NO. 2—DELAWARE, MARYLAND, VIRGINIA, WEST VIRGINIA, DISTRICT OF COLUMBIA, NORTH CAROLINA, SOUTH CAROLINA, GEORGIA, AND FLORIDA

Interstate Sanitary District No. 2 was under the direction of Associate Sanitary Engineer A. P. Miller during the entire year. The activities of this district in the order of their importance as judged by the time given to them can be classified as follows: (1) Administrative duties pertaining to the sanitary engineering activities of the domestic quarantine division; (2) inspection and supervision of water-supply systems, storage facilities, and all other sanitary and water appurtenances on interstate carriers within the jurisdiction of the district; (3) giving assistance and cooperation to State health departments in connection with the certification of water supplies used by common carriers; (4) special investigations and inspections upon the request of State health departments or other governmental agencies; (5) disseminating public-health literature among public-health workers through the mediums of the Public Health Engineering Abstracts and other printed pamphlets or publications.

VESSEL WATER SUPPLY AND SANITATION SUPERVISION

Because many vessels intended for operation in Interstate District No. 1 were constructed in this district during the year, cooperation between these two districts in review of plans for new vessels was very close. Such plans for two large vessels, as well as two smaller ones, were approved after recommendations for minor corrections and changes had been acceded to by the builders. In so far as possible this feature of the vessel work should be expanded, as it eliminates the necessity of requesting that changes be made in vessels after they are in operation.

The collection and testing of samples of water taken from interstate carriers by cooperating city health departments has lagged during the year. To obtain results in this work, it has been found necessary to confer frequently with the cooperating agencies. The number of samples collected and tested by the various cities assisting during the year are as follows: Baltimore, Md., 9; Wilmington, Del., 4; Richmond, Va., 4; Norfolk, Va., 1.

There was an increase in the number of typhoid-fever cases reported from hospital and relief stations located in this district. Last year six cases were reported, while this year there were seven cases. Of the two cases which occurred on vessels under the jurisdiction of this office, one was on a large freighter and the other on a Government dredge. Upon investigation it could not be definitely ascertained that either of these two cases could be attributed to conditions on the vessels.

Among the small vessel companies there appears to be a constant trading and shifting of vessels, but at the close of the fiscal year the records showed 64 vessel companies operating 167 vessels in interstate traffic. A temporary inspector was employed for two months during the summer to assist in investigating conditions on these vessels, and because of this additional help it was possible to cover almost all of the vessels. Last year 107 inspections were made, while this year this figure was increased to 128, of which 26 were first inspections and 102 reinspections. The water-supply systems and sanitary conditions on vessels in this territory are rapidly being improved. Last year it was necessary to issue 21 notices relative to infractions of the interstate quarantine regulations, while during the last year only 4 of these notices were issued.

Summary of vessel water-supply supervision

Activity	Passenger	Freight	Passenger and freight	Total
Inspection:				
First inspection	5	6	15	26
Reinspection	8	7	87	102
Certificates issued:				
Temporary	1	6	2	9
Regular (favorable)	13	8	90	111
Regular (unfavorable)	0	0	0	0

RAILROAD WATER-SUPPLY AND SANITATION SUPERVISION

This work has progressed exceedingly well during the last year. The percentages of investigations and certifications have reached figures never before attained. The district engineer has cooperated with all States in his territory. All of these States have engineering bureaus to perform this work, but in some cases their failure to properly administer the necessary routine results in the field work never being converted into certifications. Consequently it has been found that the giving of assistance to these States in planning and executing a well-ordered administrative scheme is one of the most fruitful lines of work.

MISCELLANEOUS ACTIVITIES

During the period of three weeks in July and August an extensive field trip through the Southern Appalachian Mountains Forest Service camps was made with officers of that service. Approximately 2,000 miles were covered in an automobile and detailed inspections were made of all the camps, playgrounds, picnic grounds, and permanent camp sites on the itinerary.

At the request of the Coast Guard, help was given in laying out a sewerage system and designing a sewage treatment plant for the Coast Guard station at Curtis Bay, Md.

By special inquiry it was ascertained that there were a number of motor-bus companies operating in interstate traffic, but that none of such companies furnished any water on their automobiles for use by the passengers.

Under the general scheme devised at the district engineers' conference in November, this office collected data from a group of the larger interstate carriers in this territory on the quality of milk and cream furnished to the traveling public. A complete report, including tables on this subject, was compiled and forwarded to the bureau.

The transactions of the 1926 conference of State sanitary engineers were prepared for publication during the year, and the district engineer as secretary-treasurer of this association performed other work incident to its organization and meetings.

The demand for the Public Health Engineering Abstracts is increasing and it has been perceived from several sources that those on the mailing list wish this service to be continued and extended. The following table gives pertinent data relative to these abstracts:

	Fiscal year ended June 30—					
	1922	1923	1924	1925	1926	1927
Publications available	243	260	169	132	92	129
Abstractors	28	42	72	81	79	78
Weekly issues	52	53	51	50	52	52
Articles abstracted	611	743	976	618	542	762
Person-issues	12,142	17,383	22,672	23,486	25,532	33,020
Mailing list	283	405	497	490	491	635

DISTRICT NO. 3—OHIO, INDIANA, ILLINOIS, WISCONSIN, MICHIGAN, IOWA, MINNESOTA, NORTH DAKOTA, SOUTH DAKOTA, AND NEBRASKA

Associate Sanitary Engineer Isador W. Mendelsohn was in charge of this district throughout the fiscal year. The work of this office included: (1) Supervision of purity of drinking, culinary, and ablutionary water supplies and systems and general sanitary conditions on vessels on the Great Lakes and trains engaged in interstate traffic; (2) assistance to State health departments in sanitary engineering projects; and (3) special activities.

VESSEL WATER-SUPPLY AND SANITATION SUPERVISION

The purity of drinking and culinary water on vessels on the Great Lakes has an important and direct effect upon millions of passengers and seamen who use these boats for pleasure and commercial purposes. Where fresh water is readily available in large quantities, as in the Great Lakes, it is natural to find that the vessels generally take their drinking and cooking water directly from overboard. This practice is potentially dangerous because cities and industrial centers located on the Lakes and vessels operating on them discharge their sewage and other wastes into the same waters. To prevent a water-borne disease outbreak aboard a vessel, it is necessary that a satisfactory water-purification apparatus be provided and operated efficiently at all times.

Inspections of vessels during the past year showed that the large majority have some type of water-purification apparatus abroad. In an appreciable number of cases these apparatus were not being operated satisfactorily, with the result that at times impure water was used for drinking and cooking. This condition is due more to lack of appreciation of the importance of constant and satisfactory operation of the water-purification machine than to deliberate neglect. It has been the plan to educate the vessel officers and company officials regarding this matter. This policy requires constant inspection of vessels. There should be at least one full-time inspector for the whole year in this district; at present there is an inspector for only four months.

During the year there has been a decided increase in number of typhoid-fever cases reported among American seamen on the Great Lakes in comparison with last year. This is due to (1) occurrence of a definite outbreak of typhoid fever on one freight vessel, and possibly on another; and (2) reporting of cases hospitalized at private hospitals at Great Lakes ports.

In November, 1926, an outbreak of typhoid fever occurred among the crew of the tramp freight vessel *Lake Gaither*, owned by the Western Reserve Navigation Co. of Cleveland, Ohio, resulting in 7 cases, 2 deaths, and about 14 cases of diarrhea. The investigation of this outbreak made by Chief Engineer Ferguson, of the Canadian Department of Health, and Surgeon Schwartz, of the United States Public Health Service, showed that water from Lakes Erie and Ontario was used aboard untreated, for drinking and cooking purposes. The case was investigated by the United States local inspectors at Cleveland, who took all possible action against the responsible officers.

Three cases of typhoid fever occurred among the crew of the freight vessel *E. C. Pope*, of the Thompson Transportation Co., in May, 1926. According to incomplete data, these seemed to be due to use of untreated lake water for drinking and cooking purposes. Since these cases were hospitalized at a private hospital, arrangements were perfected through State departments of health whereby reports of typhoid fever cases among seamen from Great Lakes vessels hospitalized at other than marine hospitals will be reported promptly in the future by the city health departments of Buffalo, Rochester, Sandusky, Cleveland, Toledo, Detroit, Milwaukee, and Chicago, and by the Minnesota Department of Health. In 1926, eight cases were reported by these cooperating health departments.

In April, 1927, an investigation was made of two cases of typhoid fever occurring among the crew of the U. S. dredge *Burton* at Detroit, Mich.

Of the 27 cases of typhoid fever among seamen on American vessels on the Great Lakes in the fiscal year 1927, 3 were firemen, 1 was a deckhand, 1 a navigation officer, 2 were oilers, 3 were watchmen, 2 were stokers, 1 a cook, 1 a derrickman, and 2 were sailors. The occupation of the remainder was not ascertained.

The following table summarizes the typhoid-fever cases among Great Lakes seamen hospitalized at United States marine hospitals since 1915:[1]

Navigation season	Cases	Navigation season	Cases
1915	60	1922	17
1916	70	1923	25
1917	49	1924	21
1918	39	1925	7
1919	24	1926	29
1920	20	1927[a]	[b] 3
1921	13		

[a] Also 1 case of dysentery. [b] Up to July 1, 1927.

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[1] Certain changes have been made in data in this table for past year due to additional information obtained.

In September, 1926, the occurrence of several cases of typhoid fever among passengers of the freight vessel *Joseph Frantz* was investigated in cooperation with the Cleveland and Milwaukee health departments and the marine hospital at Cleveland. It was found that these cases were not due to conditions aboard this vessel.

In order that officers of vessels might be thoroughly informed regarding the drinking and cooking water systems on board, the examination of such systems by captains and chief engineers at the beginning of the lake navigation season has been stressed this year. In addition, a lecture on "Drinking Water on American Vessels on the Great Lakes" was given before classes of licensed officers at Cleveland, Detroit, Marine City, and Port Huron, Mich., in February, 1927. In making inspections of drinking and cooking water systems aboard vessels, various matters concerning constant and satisfying operations were explained to the officers.

As a result of the program for physical examination of food handlers on American vessels on the Great Lakes in 1926, the first year in which this work was carried out extensively, 25 vessel companies reported as follows: 1,687 food handlers of 87 vessels were examined; 1,626 food handlers were passed; 61 food handlers failed because of communicable diseases. Many vessel companies which cooperated in this program did not keep records of the work accomplished; therefore the figures quoted are indicative only of the trend of effectiveness in this matter of physical examinations and are not to be taken as statistical record. In the 1927 season a more extensive program for physical examination of vessel food handlers was instituted.

Plans of nine new vessels under construction at shipyards in this district were reviewed and approved as regards drinking and cooking water systems. Features of satisfactory sanitary design were brought to the attention of the shipyards. The construction of different types of water-purification apparatus used aboard vessels was considered with the manufacturers, several improvements being suggested and incorporated.

A report on water-purification apparatus used aboard vessels on the Great Lakes and the inland rivers of the United States was prepared in April, 1927, in collaboration with Associate Sanitary Engineer Dopmeyer, in accordance with a recommendation of the conference of district engineers held in November, 1926.

Inspector H. M. Whimster was employed at Sault Ste. Marie, Mich., from July 1 to September 30, 1926. In this period he inspected 168 freight vessels, reinspected 428, inspected 1 passenger vessel, and collected 562 samples of water for analysis by the provincial health department laboratory at Sault Ste. Marie, Ontario. From May 28 to June 30, 1927, Inspector Judson P. Smith was employed at the post and inspected 128 freight vessels, reinspected 14, and collected 69 samples of water.

During the year the cooperative arrangement with the Canadian Department of Health has been extended, to the mutual benefit of both countries. More accurate information has been made available regarding vessel movements, water supplies and laboratory analyses, sanitary conditions, and greater assistance has been rendered and received by each Government in controlling communicable diseases on vessels on the Great Lakes and St. Lawrence River. Other agencies which have cooperated with this office were (1) the United

States local inspectors of the Steamboat Inspection Service at Great Lakes ports, who furnished invaluable data regarding vessels and acted in conjunction with this office in special investigations; (2) the United States engineer's office at Sault Ste. Marie, Mich., which provided office space and facilities to the inspector of this district stationed at that post; (3) the United States attorney's office at Cleveland; and (4) the Lake Carriers' Association, which notified its members regarding sanitary water systems and safe water supplies ashore for drinking and cooking purposes while outfitting at shipyards in the spring, and regarding operation of stills at the beginning of the navigation season, and other sanitary matters.

As in the past year, samples of water were collected and analyzed by the city health departments of Buffalo, Rochester, Sandusky, Toledo, Cleveland, Detroit, Chicago, and Milwaukee, through the cooperation of the State health departments of New York, Ohio, Illinois, Michigan, Wisconsin, and Minnesota. Special assistance was rendered at times by these city health departments in inspecting water systems on vessels in emergencies. The provincial department of health laboratory at Sault Ste. Marie, Ontario, through the Canadian Department of Health, has furnished invaluable assistance by analyzing samples of water from the freight vessels passing through the locks. The Toledo health department has also made analyses of water from freight vessels.

During the year the supervision of this office extended to American and foreign vessel registry, plying on the Great Lakes and St. Lawrence River, as follows: 29 American companies with passenger ships, 123 American companies with freight ships, and 2 foreign companies with passenger and freight ships.

Summary of vessel water-supply supervision

Activity	Passenger	Freight	Total
Inspection:			
First inspection	44	301	345
Reinspection	27	443	470
Certificates issued:			
Temporary	41	266	307
Regular (favorable)	0	0	0
Regular (unfavorble)	0	0	0
Major conferences:			
With shipping officials			45
With others			87
Water analyses:			
At city laboratories			1,856
At Canadian laboratories			683
Inspection of docks			11

RAILROAD WATER-SUPPLY AND SANITATION SUPERVISION

Railroad coach yards and methods of watering cars were investigated at Chicago (Atchison, Topeka & Santa Fe Railway); Ludlow, Ky. (Southern Railway); Bismarck, N. Dak. (Minneapolis, St. Paul & Sault Ste. Marie Railway); Mandan, N. Dak. (Northern Pacific Railway); Grand Forks, N. Dak. (Great Northern Railway); Devils Lake, N. Dak. (Great Northern Railway); and Columbus, Ohio (Pennsylvania Railroad). In connection with the latter, assistance was rendered the Pennsylvania Railroad in a series of tests instituted since April, 1927, on types of filter stones for dining cars, also various types of water hydrants in coach yards, water hose, water tanks on cars, and general sanitary conditions on cars, in yards, and at stations. It is believed that from such tests this railroad will obtain information on which the design of sanitary equipment will be based.

The construction of various types of railroad coolers and water boxes was considered with manufacturers, and suggestions for improvement were made, which were adopted. The matter of railroad incinerators was also investigated.

At the request of the State health officers, investigations were made of water supplies used by railroads for drinking and culinary purposes in interstate traffic at Glen Flora Springs, Ill.; and Bismarck, Mandan, Jamestown, New Rockford, Devils Lake, and Grand Forks, N. Dak.

Assistance was rendered the joint committee on drinking water supplies of the American Railway Association in perfecting a report in April, 1927, on coach-yard sanitation as standard railway practice. Information was obtained from certain railroads regarding water supplies used in interstate traffic which had not been reported previously.

Data regarding milk and cream supplies of 17 railroads and 9 vessel companies in this district were collected in April, 1927.

COOPERATION WITH STATE HEALTH DEPARTMENTS

At the request of the State health officer of North Dakota, assistance was rendered in reviewing plans for a storm-water sewer extension in Williston and a sewage-disposal plant in Jamestown, reviewing the new compilation of State department of health rules and regulations, inspecting the dam constructed in the Red River at Grand Forks to determine its public-health aspects, and improving the certification of railroad waters in the State.

Assistance was given the State health officer of Iowa in investigating the stream-pollution conditions at Mason City, Iowa, due to disposal of sugar refinery and packing-house wastes and city sewage into a stream and improving the certification of railroad waters in the State.

Conferences for improving the certification of railroad water supplies were held with State health officers of South Dakota, Nebraska, Wisconsin, Minnesota, Ohio, Indiana, and Illinois.

MISCELLANEOUS ACTIVITIES

The investigation of the well-water supply of the United States Veterans' Bureau hospital at Maywood, Ill., begun in June, 1926, was completed in September, 1926. As a result the use of this water by the hospital was resumed at considerable saving. Bacteriologist Butterfield and Laboratory Aid Thomson were associated in this investigation also.

In May and June, 1927, investigations were made of water and sewerage systems at Fort Yates, Fort Totten, and Turtle Mountain Indian Reservations in North Dakota, and Rapid City Indian School, South Dakota.

Information was obtained regarding drinking-water supplies on motor busses operating in interstate traffic in this district. An investigation was made of a case of anthrax occurring in a brush factory in Cincinnati in July, 1926. In March, 1927, an investigation was made of a shipment of oysters of doubtful purity to Peoria, Ill.

At the request of Professor Jordan, of Chicago University, arrangements were made to give a course of 19 lectures on industrial hygiene in the second half of the summer quarter of the university, and material for the lectures was assembled.

Upon request, a paper on "Recent Progress in Sewage Disposal and Stream Pollution in the United States" was given at the Eighth Conference on Sewage Treatment at Iowa State College in November, 1926. In October, a radio talk was given in Chicago on the activities of this office. Papers on "Responsibility of Interstate Common Carriers in Supplying Safe Drinking Water for Passenger and Crew" and "Drinking Water on Great Lakes Vessels" were prepared for professional journals.

In cooperation with the chief sanitary engineer of the Chicago health department, investigations were made of several rendering plants in the Chicago stockyards. Information obtained in the investigation was made use of by the Milwaukee health department.

In the first 10 days of May, 1927, the district engineer was detailed to assist the State department of health of Missouri in flood-relief work in the southeastern part of the State. This detail included sanitation of the area and of refugee camps and chlorination of a public water supply.

The district engineer was a member of a committee on sanitary design, construction, and installation of pumps of the conference of State sanitary engineers, which has cooperated since October, 1926, with the National Association of Farm Equipment Manufacturers and the water service section of the American Railway Engineering Association in providing for sanitary hand and power pump installations on farms, railroads, private houses, and industrial establishments.

DISTRICT NO. 4.—ALABAMA, MISSISSIPPI, MISSOURI, LOUISIANA, OKLAHOMA, ARKANSAS, KANSAS, KENTUCKY, TENNESSEE, AND TEXAS

Associate Sanitary Engineer A. L. Dopmeyer continued in charge of this district during the fiscal year.

The work carried on in the district may be divided into four major classifications, as follows: (1) Supervision of water-supply systems on vessels: (2) supervision of sanitary conditions in railroad coach yards and on railroad cars; (3) cooperation with State health departments in the certification of water supplies used on interstate carriers; (4) lectures, special investigations, and reports.

VESSEL WATER SUPPLY AND SANITATION SUPERVISION

At the close of the year there were being carried on the active files a total of 374 vessels, operated by 188 companies, all of which companies are actively engaged in interstate commerce.

During the months of October and November, two inspectors were employed for inspection of water-supply systems on vessels, one of whom was stationed at Galveston, Tex., and the other at New Orleans, La. Valuable data were secured by this work, particularly with respect to general sanitary conditions on the vessels operating on the Gulf of Mexico.

The collection and analysis of samples of water from vessels, by local authorities, and the submission of reports to this office continued to serve as a frequent check on the quality of water furnished on the more important passenger vessels. A total of 1,326 samples were analyzed in this way at the following laboratories: (1) City health department, Cincinnati, Ohio; (2) city health department, Louisville, Ky; (3) State laboratory, Louisville, Ky; (4) State laboratory, Lexington, Ky; (5) city health department, St. Louis, Mo; (6) city health department, Memphis, Tenn; (7) State laboratory, Nashville, Tenn; (8) State laboratory, Jackson, Miss; (9) State laboratory, Austin, Texas; (10) State and city laboratory, New Orleans, La; (11) State laboratory, Mobile, Ala; (12) State laboratory, Tampa, Fla.

The sampling and testing of the water from vessels, coupled with reports from inspectors of insanitary conditions noted at the time of collecting samples, has made it possible to maintain satisfactory conditions on these vessels, and an effort is continually being made to expand and develop this activity to the point where all of the important passenger-carrying vessels will be so equipped as to insure the maintenance of a high standard of sanitation in general. Personal contact with many of the shipping officials and generous cooperation on their part have been no small factors in bringing about many desirable changes on vessels.

The closer control which it has been possible to maintain over the water supplies on vessels has aparently been reflected by the reduced number of typhoid fever cases reported for the year for employees on vessels. A total of 14 cases were reported, which is a reduction of 50 per cent over the number reported during the last preceding year. Of the 14 cases reported, 6 were for persons who had been employed on passenger vessels actively engaged in interstate traffic. Of the remaining eight, four were from freight and towing vessels not actively engaged in interstate traffic, and four were from Government-owned vessels. The number of cases reported from Government vessels shows also a decrease of 50 per cent over the last previous year.

Although personal inspections of the conditions aboard vessels could not always be made immediately after the receipt of a report of typhoid fever, in some cases such inspections were made by local health authorities and reports transmitted to this office. In some instances the patients were found to have been spending a large portion of their time on shore while employed by the vessel company, and to have been living at places on shore where sanitary conditions were poor. Under these conditions, and when only the one case was reported from the vessel, there was believed not to be sufficient reason to suspect the water supply on the vessel, particularly when analytical reports showed that water to be generally safe. However, upon the receipt of each report of a typhoid-fever case, the vessel operating company was immediately sent instructions for sterilizing the water-supply system of the vessel involved.

An increasing interest was noted on the part of Government engineers in charge of vessels, in providing a safe water for drinking and culinary purposes, which probably accounts in large measure for the reduction in typhoid-fever cases reported from such vessels. Officers in charge of the operations of vessels of the War Department, Lighthouse Service, and Mississippi River Commission were conferred with on various occasions and advised concerning improvement of water supplies and general sanitary conditions on vessels.

The policy of recommending to shipping officials the use of certified water supplies ashore in preference to treating a polluted overboard supply on the vessel was continued. The use of shore supplies involves occasional inspections of hydrant boxes and hose lines, and in several instances repairs and improvements to such systems were found necessary and were made when the matter was brought to the attention of the responsible official. However, for tramp excursion steamers, towboats, and other vessels not making regular trips between the same ports, purification aboard continues to be most desirable.

Considerable time was spent during the year in obtaining data on the operation of water-purification apparatus on vessels and in attempting to have desired improvements incorporated in the designs of a number of commercial products. Such improvements have been adopted in practically all instances. Vessel companies are notified from time to time that only apparatus of approved design will be accepted for favorable certification of the vessel water supply system, and most Government engineers are also now including in their specifications for new equipment the provision that the apparatus must meet the approval of the United States Public Health Service.

Experience to date indicates that for producing a satisfactory water for drinking and culinary purposes on river vessels, the only reliable method is distillation by an apparatus of proper design and construction. As a result of the conclusions reached in this respect the ozone treatment used on some vessels in this district has been discontinued and has been replaced by distillation, so that at the present time all water used for drinking and culinary purposes on vessels under the supervision of this district is either obtained from approved sources ashore or purified on board by distillation. Of the 374 vessels on the active list, 116 have apparatus for distilling water taken on from overboard.

According to a decision reached at the district engineers' conference in November, 1926, a report was prepared jointly by Interstate Sanitary District No. 3 and this district, giving the results of experience in these districts with different types of purification apparatus, and giving the conclusions reached. A copy of this report was sent to each district engineer of the Public Health Service for his information.

In connection with a study of leakage of water through seams in tanks, where the tanks are formed in part by the hull of the vessel, the State boards of health of Louisiana and Texas rendered a valuable assistance in making laboratory tests. Chloride determinations were made for this purpose, tests of 49 samples having been made at the Louisiana State Board of Health laboratory, New Orleans, and 10 samples at the Texas State Board of Health laboratory, Austin.

In several instances the proper design of a water supply for a new vessel to be constructed was taken up with the builders.

Reports received from time to time from the Steamboat Inspection Service have been of great value in keeping up to date records on the ownership, transfer, change in name, etc., of vessels.

SUMMARY OF VESSEL WATER-SUPPLY SUPERVISION

Inspection:	
First inspections	78
Reinspections	122
Certificates issued:	
Temporary	0
Regular (favorable)	33
Regular (unfavorable)	0
Major conferences:	
With shipping officials	55
With others	15
Water analyses made:	
State laboratories	180
City laboratories	1, 146

RAILROAD WATER-SUPPLY AND SANITATION SUPERVISION

This work consisted in making inspections of sanitary conditions in coach yards, depots, and on cars. The conditions found on inspection were reported to the responsible official of the railroad and recommendations made for correction. Surveys were made at Kansas City, Mo., St. Louis, Mo., Memphis, Tenn., Texarkana, Tex., Houston, Tex., New Orleans, La., Fort Worth, Tex., and at other places as the opportunity afforded.

On a number of occasions water coolers of unsatisfactory design, or in poor repair, were noted while traveling on railroads. These conditions were reported to the local responsible official for correction.

COOPERATION WITH STATE HEALTH DEPARTMENTS

There are still a number of States in this district in which the sanitary engineering divisions are severely handicapped, due to insufficient appropriation and personnel. Such States have been assisted as much as possible in the water supply certification work, with the result that the latest compilation of statistics in this respect shows a substantial increase for every State in this district over the last previous year in the number of water sources certified.

Surveys were made (and reports submitted to the respective State health department) of interstate carrier water supplies in various States, as follows:

State	Number of water supplies surveyed
Texas	5
Missouri	5
Oklahoma	3
Arkansas	2

MISCELLANEOUS ACTIVITIES

About one month's time was devoted to work in the flooded area along the Mississippi River during May and June, 1927. The work consisted principally in making temporary improvements to public water supplies which had been affected by the flood waters, and correcting insanitary conditions caused by the flood.

At the request of the State Board of Health of Kansas a paper was prepared and presented at the meeting of the waterworks school at Lawrence in January, 1927.

A paper was also delivered at the request of the State Board of Health of Texas at its waterworks school held in Dallas in January.

Abstracts were prepared from time to time of public health articles for publication in the Public Health Engineering Abstracts.

DISTRICT NO. 5 (ARIZONA, CALIFORNIA, COLORADO, NEW MEXICO, NEVADA, AND UTAH)—DISTRICT NO. 6 (IDAHO, MONTANA, OREGON, WASHINGTON, AND WYOMING)

Sanitary Engineer H. B. Hommon continued in charge of Interstate Sanitary Districts 5 and 6 and the supervision over sanitation in the national parks. He was also in charge of Shellfish Sanitation District No. 7 during the entire year. He was assisted by Associate Sanitary Engineer Frank R. Shaw throughout the year and by Assistant Sanitary Engineer L. D. Mars up to May 5, 1927. The work carried out during the year was divided as follows: (1) Examination of water-supply systems on vessels engaged in interstate traffic; (2) cooperation with the State departments of health in the two districts in the examination of water supplies used on trains operated in interstate traffic and in the investigation of special problems of sanitation; (3) cooperation with the National Park Service in the supervision over sanitation in the national parks; (4) cooperation with the Indian Service; and (5) cooperation with the Forest Service.

VESSEL WATER SUPPLY AND SANITATION SUPERVISION

The inspection of vessel water-supply systems was carried out by two engineers who spent about one-quarter of their time on this work. There are approximately 450 vessels in the two districts that are owned by about 125 different companies. The vessels are operated out of coast cities from San Diego to Seattle, a distance of about 1,400 miles, and on rivers extending inland along the coast. As in the past, an attempt was made to inspect all the large passenger and freight carrying vessels, and it is believed that considerably more than 90 per cent of the passengers and seamen carried on vessels engaged in interstate traffic in districts 5 and 6 obtained water from vessels with approved water-supply systems.

Although the number of certificates issued for sources of water supplies used by vessels engaged in interstate traffic was few, nevertheless, practically all the supplies used for vessels were either approved for use by railroads or were satisfactory but not approved on account of failure to make out the certificates or make the necessary bacteriological analyses of samples of water from the various sources.

Summary of vessel water-supply supervision

Activity	Passenger	Freight	Total
Inspection:			
First inspection	60	60	120
Reinspection	42	23	65
Certificates issued:			
Temporary	0	0	0
Regular (favorable)	67	41	108
Regular (unfavorable)	0	0	0
Major conferences			20
Typhoid-fever cases:			
Reported			12
Investigated			2

RAILROAD WATER-SUPPLY AND SANITATION SUPERVISION

The most important work done during the year in the supervision of water supplies used by railroads in interstate traffic was a complete survey of all the supplies in Nevada used by railroads. In California, Oregon, Arizona, and Montana, assistance was given to the respective State health departments, but no extensive surveys were made.

The number of sources of supplies in the two districts certified for use on railroads was less than for the previous year but there was a general improvement in the water-supply situation in practically every State. In the State of California only 5 per cent of the supplies used by railroads were certified, whereas during the previous year 62 per cent were approved, and no certificates were issued in the State of Washington, whereas during the fiscal year of 1925, 12 per cent were certified. In both these States there were more supplies that could have been approved in 1926 than in 1925, but the State boards of health were unable to prepare the certificates.

COOPERATION WITH STATE HEALTH DEPARTMENTS

The work carried out in cooperation with the State departments of health of the 11 States in the two districts followed the general lines of previous years. Conferences concerning many different problems of sanitation were held with the sanitary engineers of the States of California, Oregon, Washington, Montana, Colorado, Utah, and Arizona.

In Nevada a special investigation was made at Elko with regard to the location of a county fairgrounds near the water supply of the city, and a complete survey was made of the water supplies in the entire State available for automobile tourists. This survey, including the water supplies used by railroads, required the examination of 104 supplies. It was made at the request of the State health officer and the director of the State highway department. The purpose of making the survey of highway water supplies was to determine the quality of the water from a bacteriological and chemical standpoint and to enable the highway department to post signs on the desert which will indicate where drinking water can be obtained.

SANITATION AND MEDICAL ASSISTANCE IN THE NATIONAL PARKS AND MONUMENTS

The assistance rendered the National Park Service, at the request of the Secretary of the Interior, in maintaining necessary sanitary conditions in the national parks, was continued along the same general lines as in previous years. Owing to the large increase in travel to all the parks (300 per cent in Yosemite over previous year), it is becoming increasingly difficult each year to provide adequate and pure water supplies, to dispose of sewage and garbage, and to anticipate the requirements of the future.

Acting Asst. Surg. Matthew Brady was on duty in Yellowstone Park during the year and made inspections of hotels, mess houses, barber shops, and all other places handling or selling food products or soft drinks. This work is done in the other national parks by the engineers of the service.

The more important activities carried out in the various parks during the year were as follows:

Yellowstone.—The work done during the year in which the service sanitary engineers took an active part included (1) the design and construction of a sewerage system and treatment plant for the Fishing Bridge automobile camp; (2) design of settling tank with sterilization chamber for the Yellowstone Lodge & Camps Co. at the Canyon; (3) remodeling of sewage-disposal plant at eastern entrance; (4) design of sewage-disposal plant for Madison Junction; (5) investigation of method of sewage disposal for Mammoth Hot Springs; (6) design of incinerator for junction at Old Faithful; (7) mosquito-control work; (8) general supervision over operation of 12 sewage-disposal plants in the park, including operation of 6 liquid-chlorine machines; and (9) general supervision over 16 water supplies used in the park.

Yosemite.—No new construction work in relation to sanitation was carried out during the year. The garbage incinerator designed by this office and built during the previous summer was operated throughout the year and burned successfully the garbage from a population of more than 100 per cent more than the units were designed for. The cost of repairs for the year were approximately $75, and the expenses for labor and materials for operation were less than those for incinerators operated by large cities. The waste tin-can baling machine and the garbage-can washing equipment were operated throughout the year, and they have been so satisfactory that they are now considered standard equipment. The tin cans are reduced about 92 per cent in volume and the garbage cans are returned clean and dry, which is a decided advantage in keeping flies away from storage places for the cans at the hotels and other places. There were no odors at the incinerator and no flies.

Estimates were prepared for the cost of a new water supply for the hotel and camp grounds at Glacier Point. The water-supply situation at this place has been serious for several years, and the problem is a very difficult and expensive one owing to the high cost of transportation and the lack of a source of supply that yields sufficient water for domestic purposes during July, August, and September.

Considerable time was spent during the year in conferences with the superintendent and civil engineer of the park on the operation of the sewage-treatment plant; the location of an automobile camp ground on the Hetch Hetchy watershed, which lies in the park and will be the source of the water supply for the city of San Francisco; the remodeling of the swimming pools; the inspection of automobile camps, hotels, and other camps; supervision over water supplies; disposal of sewage from hotel at Glacier Point; and investigation of pollution of Merced River.

Grand Canyon, South Rim.—The sewage-treatment plant which was started in operation on May 29, 1926, was operated throughout the year and the results were highly satisfactory. This plant, designed by this district, is one of the most complete that was ever constructed. It costs $3.09 per 1,000 gallons to obtain water for domestic purposes, and the sewage-treatment plant was designed to purify the sewage so it could be used in place of fresh water for sprinkling lawns, cooling water for Diesel engines, flushing toilets in comfort stations separate from all other buildings, and sprinkling roads. The effluent produced by the activated sludge plant and gravity sand filters and sterilized with liquid chlorine, has been consistently clear, odorless, free of suspended matter, and highly oxidized, and over a period of six months the final effluent did not show *B. coli* in any one set of samples analyzed every week. The volume of sewage reclaimed has run as high as 100,000 gallons per day. The reclaimed sewage is stored in an elevated steel tank having a capacity of approximately 270,000 gallons, and there is no deterioration of the reclaimed sewage although the tank is exposed to the heat of the sun. The distribution pipes for the reclaimed sewage are inclosed in vitrified pipe, and all outlets are painted a special color and otherwise protected to guard against cross connections with fresh-water lines.

A garbage incinerator designed along the same general principles as the one built in Yosemite, was started in operation in August, 1926, and used throughout the year. Garbage-can washing equipment was also used, and late in the year a waste tin-can baling machine was installed. All this equipment was provided by the Santa Fe Railroad Co. after being recommended by service engineers. All the apparatus has worked satisfactorily, and the garbage and refuse are now being disposed of in a practical and economical manner. The hot water obtained from pipes used for drying the garbage is sufficient at all times to wash all the garbage cans. One Indian, receiving $3 per day, operates the incinerator, cuts the wood, bales the tin cans, and washes the garbage cans. All the garbage and refuse produced at the Grand Canyon is disposed of at the incinerator.

Grand Canyon, North Rim.—A conference was held at the North Rim, June 2 to 7, 1927, with representatives of the Union Pacific Railroad Co. and the Park Service in regard to the disposal of sewage and garbage from a large development that the Union Pacific will build at the North Rim during 1927–28. Final plans for the disposal of sewage have not been prepared, and the problem will be difficult owing to the fact that the drainage from this area goes into a stream furnishing the water supply for a lodge and camps operated by the Fred Harvey Co.

Glacier.—The work in Glacier included the regular routine inspection of hotels, camps, stores, etc., and recommendations for general improvements in methods of disposing of sewage and garbage and for a more satisfactory water supply for Many Glacier Hotel. There was also included recommendations for development of general plans for taking care of sanitary conditions at two large automobile camp grounds that will be developed during the next few years.

Mount Rainier.—General inspections were made and detailed estimates were prepared for sewerage systems, disposal plants, and garbage incinerators for Paradise Valley and Longmire.

Crater Lake.—In addition to the general inspections that were made, plans and estimates of cost were prepared for developing present water supply and equipment for pumping water to storage tanks.

Sequoia and General Grant.—Water-supply systems, including intakes, force mains and storage tanks, and sewerage systems and disposal plants, have been installed in these parks during the past few years, and these facilities are still meeting all the demands, although the attendance has increased over 200 per cent. The first unit of the garbage incinerator designed especially for use in the national parks was built in Sequoia four years ago, and it is in good condition at the present time, and burning all the garbage produced in the park.

Zion.—General inspections were made in the park and particular attention given to methods of sewage disposal for the future. The large increase in travel, the extremely limited areas available for sewage disposal, and the use of the Virgin River, which flows through the park, for drinking water below, has created a problem that will be very difficult and expensive to solve.

Rocky Mountain.—Two trips were made to this park during the year for the purpose of conferring with the superintendent with regard to special problems of sanitation, and in particular to the design and construction of a sewerage system and disposal plant for the utility site at Government headquarters. The disposal of sewage at this place is a difficult problem owing to the fact that the sewage-treatment plant must be operated through the extremely cold winters and that a very high degree of treatment is required. The plant designed and practically completed during the year included settling tank, siphon chamber, glass-covered slow sand filters, sterilization chamber, filter gallery, and sludge beds.

Platt.—The mineral springs which constitute the principal features of this park are situated near the water level of a creek that flows through the town of Sulphur, and three of the springs showed contamination last year. Improvements were recommended and carried out, and the results have been satisfactory, but these springs can not be considered safe sources of drinking water until more extensive and permanent repairs are made. Plans and estimates of cost for permanent improvements have been submitted.

Carlsbad Cave National Monument.—No work was done at this monument during the year in carrying out recommendations made for sewerage system and disposal plant. Money is available, however, and plans are being prepared.

Pinnacles National Monument.—Two inspection trips were made to the Pinnacles to advise with the custodian in regard to the design and location of a swimming pool and the management and operation of other sanitary facilities in the automobile camp grounds.

Miscellaneous work in parks and monuments.—A large amount of information on various phases of sanitation was furnished the superintendents of parks and custodians of national monuments. There are 19 national parks and about 35 national monuments, and necessarily a large amount of assistance must be given through correspondence rather than by personal visits.

MISCELLANEOUS ACTIVITIES

The district engineer attended the annual conference of park superintendents in Washington, D. C., and read a paper on the cost of sanitation per visitor to the various parks.

At the request of the Office of Indian Affairs, a complete survey of the water supply at the headquarters of Fort Lapwai Indian Reservation was made. Based on this survey, a map was completed giving the location of all water lines, buildings, and other pertinent data, and a report stating the estimates of cost for a remodeled system was submitted.

Conferences were held with the district supervisors of the Forest Service at Portland and Denver, with particular regard to problems of sanitation in the national forests under the direction of these supervisors.

SHELLFISH SANITATION

The plan of work in the field of shellfish sanitation, carried on in cooperation with State and local health authorities and other Federal agencies, was essentially the same as that followed during the previous year.

It has been the aim of the Public Health Service to assist the shellfish-producing States in developing efficient local sanitary supervision over the production and handling of shellfish, thus assuring the safeness of such products at the source, rather than to depend upon the exercising of control through a separate system of Federal inspection and the interception of shipments in interstate traffic. To this end the service continued, through its field organization, to assist with the making of sanitary surveys of shellfish-growing areas, the inspection of shucking and packing houses, the preparation of adequate local regulations, and the organization of local control machinery. Included in these activities were special studies, on an intensive scale, of Hampton Flats, in Hampton Roads, Va., of certain areas in the Potomac and Patuxent Rivers, in Maryland, through the use of the laboratory launch *Shearwater*, and of the clam-growing area in Sandy Hook Bay, N. J., in cooperation with the State department of health.

At the request of the authorities of the State of Washington a complete sanitary survey of the shellfish industry and the State control machinery was made by a service representative under the direction of the officer in charge of Shellfish District No. 7. A report, with appropriate recommendations, was furnished to the State health officer on the completion of this work. A special survey also was made in Oregon.

At the close of the year the States of Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, Florida, Mississippi, Alabama, Louisiana, and Washington all had set up adequate local machinery for sanitary supervision of the shellfish industry.

The Public Health Service continued to cooperate with the shellfish producers and the health authorities in the consuming States by passing upon the certifications made by the authorities of the producing States and sending out periodically lists of approved certifications. The mailing list for these publications was extended to cover every city with a population of 25,000 or over in the United States.

The research work being carried on at the experimental laboratory at Craney Island, Norfolk, Va., was continued along lines established during the previous year. Special studies were made in connection with the purification of oysters through chlorination, and observations were made on the effect of low temperature on the bacterial content of oysters growing in polluted waters. The latter study revealed that in the region of Norfolk the effect of hibernation of the oyster is not sufficient to prevent dangerous contamination of such shellfish grown in grossly polluted areas. In connection with the chlorination experiments, it was observed that individual oysters taken from polluted waters frequently vary widely in the amount of contamination as shown by the usual examination. These observations indicate that oyster scores, as at present determined, are of doubtful value in determining the probable safeness of such shellfish if the scores are intended to show freedom from pathogenic organisms or that the oysters have been taken from areas considered safe. While the chlorination experiments indicated in a general way that the storage of polluted oysters in chlorinated water tends to lessen the amount of contamination in such oysters, the results of many of the experiments were not consistent with this indication. This work will be continued. therefore, through the coming season.

RURAL HEALTH WORK

Cooperative demonstration projects in rural sanitation were carried on in the fiscal year ended June 30, 1927, in 85 counties or districts in 18 States, as follows:

Alabama	9	Mississippi	4
Arkansas	2	Missouri	9
California	3	Montana	2
Georgia	7	New Mexico	8
Iowa	1	North Carolina	1
Kansas	3	Oklahoma	3
Kentucky	1	Tennessee	7
Louisiana	2	Virginia	10
Massachusetts	1	West Virginia	12

As in the previous year, the appropriation "For special studies of and demonstrations in rural sanitation" was $75,000, out of which a budget saving of $2,000 was set aside, leaving $73.000 for the conduct of the work during 1927. Of this amount, a total of $65,885.09 was expended through specific allotments toward the support of the 85 field projects and $4,586.43 was used for special studies and administration.

As in the past, the work carried on in the demonstration projects yielded, on the whole, highly satisfactory results. From the observations which have been made possible through the participation of the

Public Health Service in the maintenance of these projects, the conclusion may be drawn that the principle of cooperative rural health work unquestionably is sound in practice. It has been gratifying to note that public-health administrators generally now appear convinced that local official health service, under the direction of a trained, efficient whole-time local health officer, is the most essential element in the development of an adequate system of effective and economical health protection, and that the prospects appear bright for a better rate of progress in the organization of whole-time health service for the rural population in the next few years.

The details relating to the work carried on in the 85 projects will be made the subject of a special publication.

Public-Health Measures Necessitated by the Florida Hurricane

Upon request of the State and local authorities two medical officers and three sanitary engineers were sent to the disaster area in Florida on September 21 and 23, 1926, to assist in establishing emergency public-health measures. A hasty survey was made of the affected areas and assistance was given to local authorities in the prevention of the spread of smallpox and other epidemic diseases and in the protection of water supplies and the disposal of wastes. Advice was also given regarding mosquito-control measures, as the prevention of mosquito breeding was one of the most important problems in the area affected.

Adequate measures for the prevention of the spread of smallpox and other epidemic diseases were effectively carried out through the medium of State and local health officials. The Public Health Service officers were able to give all of the assistance necessary and to return to their permanent stations on October 7, 1926.

Throughout the area prompt attention appeared to have been given toward correcting conditions which might affect health. The weather after the storm was clear and warm and greatly aided in bringing about an improvement in sanitary conditions as well as in other conditions.

Immediately following the storm a considerable part of the area was inundated to a greater or lesser extent, partly from the sea and partly from the overflow from the "glades." The greater part of the built-up area quickly recovered, but those areas near or actually in reclaimed glade territory remained flooded for a considerable period, with some areas still flooded. The final unwatering of these areas depended upon the lowering of the water in the glade area which lies to the west of the built-up section along the coast.

A rather hurried survey was made of the entire area in order to determine conditions and the remedial measures necessary.

From the standpoint of sanitation the city of Hialeah, a western suburb of Miami, appeared to be in worse condition than any other section. This city is in the glade area, the canal from Lake Okeechobee passing through the city. On September 29 the ground throughout the city was for the most part covered with water. As the ground level and the water level in the canal were approximately the same, little relief could be expected until the water level in the canal receded. This city is not sewered, depending upon septic tanks in the major part of the white section and privies in the negro section. The destruction was so great, however, that relatively few of the houses were habitable and the entire negro section was depopulated.

The city of Miami installed two large pumps to remove the water as far as possible from the flooded area within the city and also assigned an assistant engineer to handle the sanitary problems. Oil and disinfectants were used very generously.

A Public Health Service sanitary engineer was assigned to this area and reorganized the work of mosquito control within the city proper, relieving the engineer from Miami. He also advised the sanitary department as to other necessary work.

Conditions in other sections were in much better shape except at Fort Lauderdale, where sanitary work was somewhat disorganized. A Public Health Service sanitary engineer was assigned to this area to advise as to the necessary work. Here, as in other sections, oil and disinfectants had been spread lavishly immediately following the storm.

Public Health Measures Necessitated by the Mississippi Flood

Upon the recommendation of Secretary Hoover, acting as chairman of the committee of Government executives appointed by the President to cooperate with the Red Cross in emergency relief work in the area affected by the Mississippi flood, an officer of the Public Health Service was detailed to serve at the national disaster relief headquarters of the American Red Cross at Memphis, Tenn., as liaison officer between the Red Cross organization and National and State public health officials. In this capacity this officer was enabled to determine from the State health officials in the flood area their most urgent needs as to trained public-health officers, sanitary inspectors, public health nurses, and other sanitary personnel and to secure the needed assistance from the United States Public Health Service and from State, municipal, and local health departments throughout the country. Urgently needed biological products, such as smallpox vaccine, antityphoid vaccine, antitetanus serum, and the like, were also made available in large quantities through national, State, and municipal public-health agencies.

From its rural-sanitation force the Public Health Service immediately placed at the service of each of the State health officers in the flood area a medical officer thoroughly experienced in public-health emergency work and familiar with the localities affected by the flood. Other medical officers and sanitary engineers were added until, within a period of 10 days, 14 Public Health Service officers of this type were on active duty. Upon these men the State health officers placed their main reliance for assistance in the general supervision and organization of work for the prevention of the spread of epidemic disease and pestilence. In this emergency the value and efficiency of the officers trained in the rural-sanitation work of the Public Health Service was sufficient proof of the necessity for continued support of this important and valuable activity.

The response of State, municipal, and local public health agencies throughout the country to the appeal of the Public Health Service for trained personnel was immediate and generous, and added to this were many offers of assistance from university staffs and private agencies of various kinds. As a result, the immediate and temporary public health needs of the flood area were met within a comparatively short time and the supply of available personnel was far from being exhausted.

With the recession of the flood and the return of the temporary personnel to their respective organizations, the problem of providing public health protection for the inhabitants of the devastated areas during the period of rehabilitation confronted the Public Health Service and the State health officials. In order to arrive at a plan for meeting this situation, a conference was called at New Orleans, La., on June 5, 1927, under the auspices of the American Red Cross and attended by the Surgeon General of the Public Health Service, the State health officers of the flood area, and representatives of the Rockefeller Foundation and the American Red Cross.

The plan developed and agreed upon at this conference was believed by those present to afford the best practicable means for the protection of the flood area against epidemic disease during the rehabilitation period. In addition, its character was such as to enable the committee to work out a permanent program of health and sanitation.

As presented to the department and approved, the plan provides for the establishment of county health units in the affected counties, to be conducted under the immediate direction of the State boards of health and county authorities and made possible through the financial cooperation of the United States Public Health Service and the Rockefeller Foundation. It is proposed that this arrangement continue for a period of 18 months from the time of its establishment, when it is believed that the States and communities will be in position to assume a much larger proportion of the expense and that a reorganization of the plan will be in order.

A total of 90 counties in 7 States (Kentucky, Tennessee, Mississippi, Missouri, Louisiana, Illinois, and Arkansas) is included in the plan. During the fiscal year 1928 the cost of the work to the several agencies is estimated as follows:

State departments of health	$198, 245
Counties	365, 390
United States Public Health Service	262, 000
Rockefeller Foundation	130, 000
Total	955, 635

Through its participation in the plan as indicated, the United States Public Health Service will be enabled to prevent the spread of smallpox, trachoma, and typhus fever within the flooded areas and to other States, and to meet any emergencies due to other epidemic diseases that may arise. Through the program of work thus promptly inagurated, grave apprehension on the part of the people in the flooded region as to the likelihood of widespread occurrence of pestilential disease following the flood has been allayed and confidence in health protection and conservation is being restored.

Departmental approval of the participation of the United States Public Health Service to the extent of $262,000 in the plan as set forth above was given in department communications of June 13

1927, and June 23, 1927, the former authorizing expenditures of $104,000 and the latter $158,000, both from the appropriation prevention of the spread of epidemic diseases for the fiscal year July 1, 1927, to June 30, 1928.

Following is a resolution adopted at New Orleans, La., June 5, 1927, at the conference of State health officers in the flood area, Surgeon General of the United States Public Health Service, the director for the United States of the International Health Division of the Rockefeller Foundation, the national medical officer of the American National Red Cross, and other representatives of State health departments, United States Public Health Service, and the Red Cross Nursing Service, June 5, 1927:

Be it resolved, That it is the unanimous opinion of this conference that the present and future relief projects in the field of health and sanitation to meet the increased hazards from malaria, smallpox, typhoid fever, dysentery, and other filth-borne diseases, outlined by the national medical officer of the American Red Cross and developed by the State health officials in the flooded area, constitutes the minimum health program necessary to adequately meet the emergency situation in health and sanitation produced by the flood; and that no detail of this program can be eliminated without seriously endangering the lives of disaster sufferers.

The conference further requests and strongly urges that this program in all its details be immediately officially accepted as the Red Cross health program.

Furthermore, the conference believes that the program as a whole, and in all its details, represents the full amount of work in the field of health and sanitation for which the Red Cross might well be held responsible, to meet the unusual health and sanitary condition produced by the flood.

That the proposed program gives ample protection to the affected States against epidemics, and gives enough leeway both in the nature of the service and the time allowed, for the communities to work out a permanent program of health and sanitation.

That, considering fully the facts presented to the conference by the State health officers, this emergency health program as presented should not be subject to radical change.

Dr. H. S. Cumming, Surgeon General, United States Public Health Service; Dr. F. J. Underwood, State health officer, Mississippi; Dr. William F. King, State health officer, Indiana; Dr. A. T. McCormack, State health officer, Kentucky; K. F. Maxcy, past assistant surgeon, United States Public Health Service; John McMullen, senior surgeon, United States Public Health Service, liaison officer with Red Cross; A. J. McLaughlin, surgeon, United States Public Health Service; W. C. Rucker, surgeon, United States Public Health Service; J. H. O'Neil, sanitary engineer, Louisiana State Health Department; John A. Ferrell, Associate Director International Health Division, Rockefeller Foundation; Dr. Oscar Dowling, president, State Board of Health, Louisiana; Dr. E. L. Bishop, State health officer, Tennessee; Ira Brown Krause, M. D., director, Bureau Child Hygiene, Missouri, attending for Dr. James Stewart, State health officer, Missouri, invited but unable to attend; Valeria H. Parker, M. C., American Social Hygiene Association; Elizabeth G. Fox, supervisor public health nursing with American Red Cross; and Dr. W. R. Redden, national medical officer, American Red Cross.

PUBLIC HEALTH MEASURES NECESSITATED BY EPIDEMIC OF TYPHOID FEVER AT MONTREAL, CANADA

In March, 1927, consular and newspaper reports indicated that a serious epidemic of typhoid fever existed in Montreal, due probably to infected milk. Soon after this information was received, the

Bureau of Chemistry requested advice as to whether the public health menace to this country through infected milk was sufficient to warrant the placing of an embargo on milk and cream from Montreal and vicinity. Basing its action upon information received from the American consulate in Montreal and from an officer of the United States Public Health Service stationed in that city on immigration duty, the Public Health Service advised the Bureau of Chemistry that, in its opinion, conditions justified the placing of an embargo upon milk and cream from Montreal and from all sources within a radius of 200 miles of that city. The embargo was established and remained in force until April 26, 1927, at which time the evidence had shown that milk from that part of the Province of Ontario which came within the embargo might safely be released. On May 6, 1927, the embargo against the balance of the milk and cream was raised, with the exception of that produced, processed, or handled within the city of Montreal. Against the latter, the embargo remained.

The recommendation of the Public Health Service for removal of the embargo from milk and cream from the Province of Quebec, exclusive of Montreal, was based upon the facts:

1. Analysis of the incidence and distribution of typhoid fever in the Province of Quebec during the past six months presented in person by Dr. J. A. Amyot, Deputy Minister of Health of Canada, to this bureau does not indicate that milk in that Province, exclusive of the city of Montreal, has caused typhoid fever.

2. Assurance from Dr. J. A. Amyot, Deputy Minister of Health of Canada, that the provincial department of health is administered by capable and efficient public health officials, that it is adequately supported, and that measures for the sanitary control of dairy products are efficiently carried out.

3. Assurance from the provincial bureau of health and the provincial department of agriculture, with indorsement by the Federal Department of Health and the Federal Department of Agriculture, that measures will be taken to prevent shipment to the United States from any place in the Province of Quebec of milk and cream from Montreal against which the embargo remains in force. This does not apply to milk and cream undergoing simple transshipment through Montreal.

4. Assurance of the director general of the bureau of health of the Province of Quebec that it will furnish to the Surgeon General of the United States Public Health Service at Washington, D. C., a report of future occurrences of any outbreaks of epidemic diseases due to milk in the Province of Quebec, and what steps are being taken to remedy this, so that the United States Public Health Service will be satisfied of the situation. In this connection it is clearly recognized by the Public Health Service, and by the Federal and provincial health authorities of Canada as well, that because of the many typhoid carriers who will undoubtedly be present throughout the Province of Quebec as the result of the extensive typhoid epidemic in Montreal, scrupulous care in the sanitary control of the production and handling of milk must be exercised by the Canadian health authorities in order to prevent future typhoid infection of milk and reestablishment of the embargo.

5. Recommendation of Dr. J. A. Amyot, Deputy Minister of Health of Canada, that under existing conditions in the Province of Quebec, exclusive of Montreal, milk and cream from that Province may be admitted to the United States with confidence as to its safety.

By reason of the fact that the typhoid-fever epidemic in Montreal continued unabated, grave apprehension was felt by public-health authorities throughout the United States lest the disease might spread from Montreal into the United States. Apprehension was also felt for the safety of United States citizens who might visit Montreal. The demands for information and advice became so urgent that the Public Health Service, with permission from the Dominion provincial and municipal health officials, detailed a board of commissioned officers to visit Montreal and vicinity for the purpose of ascertaining conditions and determining measures necessary to prevent the spread of the infection into the United States and to safeguard the health of its citizens.

This board submitted a detailed report of its findings and concluded:

1. The typhoid-fever epidemic in Montreal, Canada, since February 15, 1927, was beyond reasonable doubt caused by infection distributed in the output of milk from the plant of the Montreal Dairy Co. (Ltd.) in that city.

2. Though contributory infection may have been introduced into the milk at one or more of the four stations or within the plant in Montreal the preponderance of evidence is that the bulk of the infection was introduced into the milk at the farm sources and was enabled to multiply before the milk reached the city plant.

3. Though it was barely possible for a very small proportion of whatever infection was in the milk to pass through the Pasteurization machine without being heated long enough and at a high enough temperature to be destroyed, the preponderance of evidence is that a very considerable proportion of the infected milk was passed through and distributed from the plant without being subjected to Pasteurization treatment.

4. A large proportion of the milk which at the beginning of the epidemic was distributed through the plant of the Montreal Dairy Co. (Ltd.), and which is now presumably being distributed through other plants or channels to consumers in Montreal and elsewhere is not now being officially controlled in such manner as to preclude its possible menace to the public health.

5. Montreal is not yet a comparatively safe city for visitors who are likely to be susceptible to typhoid-fever infection.

6. Milk and milk products derived from sources within the general vicinity of Montreal do not appear to be produced or processed under satisfactory sanitary conditions nor under official health supervision approaching adequacy.

The recommendations of the board were as follows:

1. That State and local health officials and other persons concerned be advised that Montreal is not now, from a typhoid-fever standpoint, a comparatively safe city for tourists from the United States to visit and is not likely to be such for months yet to come, unless local health service in the city of Montreal and the vicinity thereof promptly is made much more nearly adequate than it now is.

2. That such steps as may be necessary be taken to encourage or bring about under proper official supervision radical improvement in sanitary conditions under which milk and milk products are produced, handled, or processed in the city of Montreal or at any other place in the Province of Quebec within a radius of 100 miles of the city of Montreal for export to the United States; and that such milk or milk products after reaching points to which shipped in this country and before being distributed to consumers be Pasteurized or otherwise processed under official supervision so as to be rendered free from typhoid, tuberculosis, or any other infection likely to endanger human health.

CONFERENCE OF THE SURGEON GENERAL WITH STATE AND TERRITORIAL HEALTH AUTHORITIES

The twenty-fifth conference of the Public Health Service with the State and Territorial health authorities was held on May 20 and 21, 1927, in accordance with the provisions of the act of July 1, 1902.

While the State health officers of States in the flooded area were, with few exceptions, unable to attend on account of the urgent need of their services in the field, delegates were present from 21 States, the District of Columbia, and the Territory of Hawaii. The subjects discussed were as follows:

1. Public health organization in time of disaster.

Desirability of developing a general plan of organization of public health agencies, Federal, State, and local, to serve in time of disaster. The plan should provide for the coordination of other agencies concerned with medical relief, such as American Red Cross, county and local medical societies, and the like. Through the experience of the State health officers in the recently flooded areas and those of Florida and Illinois, it is hoped that practical definite recommendations as to such a plan may be formulated.

2. The sanitary control of shellfish.

(1) Relation of the Public Health Service to shellfish sanitation in producing and consuming States. (2) Cooperation of the consuming States in the shellfish certification procedure.

3. Tularaemia—What State health authorities should do about it.

Health authorities are frequently sought for press interviews on this subject. Citizens believe that statements should be given out regarding rabbits. What form of public statement should be given out by State health officers?

4. Development of a uniform standard for the reporting of influenza—agreement on a definition of influenza.

At the present time many forms of respiratory disturbances are reported as influenza. A uniform standard is much needed.

5. Progress in antirabic vaccination of dogs.

Vaccination of dogs against rabies was discussed at length at the last annual conference. A motion was passed providing that the Public Health Service, in cooperation with the Bureau of Animal Industry of the Department of Agriculture, issue uniform recommendations for prevention of the spread of rabies and for its interstate control.

6. Present status of venereal disease control.

(1) Present scope of Public Health Service program. (2) Study of prevalence. (3) Proposed studies.

7. Report of committee on standard form for reporting county health work.

This committee was appointed in accordance with a resolution passed at the last annual conference.

8. A proposed study of rural health work.

A proposal has been made by the American Public Health Association and indorsed by the Metropolitan Life Insurance Co. and the Millbank Fund, that certain studies of the organization, scope and effectiveness of rural health work be made for the purpose of securing data for use in determining, if possible, how more and better rural health work may be developed.

9. Typhoid carriers and present status of control measures.

This subject has been of concern to several State health officers during the year, and all available information has been sought. This matter was of especial importance at that time, as the Montreal typhoid epidemic was expected to result in a number of carriers, some of which would come to the United States.

10. Consideration of deaths from alcohol in the United States in relation to the public health.

This subject is of interest and concern to the majority of State and Territorial health authorities, who requested that it be considered at this time. The discussion was conducted strictly from the statistical and public health standpoint.

DIVISION OF FOREIGN AND INSULAR QUARANTINE AND IMMIGRATION

In Charge of Asst. Surg. Gen. S. B. Grubbs

Quarantine Transactions

During the fiscal year 1927, officers of the Public Health Service engaged in the administration of the United States quarantine laws inspected 20,284 vessels, 820,793 passengers, and 1,140,922 members of crews at the continental maritime stations. At insular stations 2,991 vessels, 169,461 passengers, and 226,373 members of crews were inspected. At foreign stations 5,954 vessels, 424,172 passengers, and 272,873 members of crews destined for ports of the United States were inspected. There were 5,114 vessels fumigated or disinfected at continental stations, 692 at insular stations, and 1,310 at foreign stations. At the border quarantine stations there were 83,253 travelers inspected, exclusive of the local interurban traffic.

General Prevalence of Quarantinable Diseases

Cholera.—Cholera was prevalent during the fiscal year in India, Siam, French Indo-China, China, Manchuria, and Chosen. There was a severe epidemic during the summer of 1926 in Shanghai. Just after the close of the fiscal year the disease spread to ports in the Persian Gulf, Iraq, and Persia.

Plague.—This disease was reported from nearly all parts of the world with which we carry on commerce. It appeared in Asia, Africa, Europe, and South America. Sporadic or imported cases, reported from several ports where the disease is unusual, emphasized the necessity for constant vigilance. Although the number of cases decreased in countries where the disease is usually prevalent, there was little, if any, decrease in the number of ports in which plague appeared.

The Japanese steamship *Manila Maru*, from Pacific ports and ports in South America, arrived at New Orleans on October 24 with two human cases of bubonic plague. The patients were removed to the United States Marine Hospital, where one patient subsequently died. Diagnosis in both cases was confirmed bacteriologically and clinically. Repeated cyanide fumigations were made during discharge of cargo, under supervision, into barges alongside. After complete discharge, the vessel was given thorough fumigation throughout and was surveyed by a rat-proofing expert to locate the breeding places of rats on the ship and permanently to eliminate all these in so far as possible. The vessel left New Orleans on November 17, 1926, bound for Cristobal, Canal Zone; San Pedro, Calif.; Honolulu, Hawaii; and Japan.

Smallpox.—Smallpox was reported from Europe, Asia, Africa, North and South America, and many isolated ports.

Typhus fever.—There has been a decrease in the number of cases of typhus fever since shortly after the close of the World War, but the disease is still a serious problem in the Ukraine, Russia, Poland, Rumania, and other parts of Eastern Europe and Asia. The disease is prevalent in Mexico and along the western coast of South America. Cases were reported in the Irish Free State.

Yellow fever.—This disease was reported at Bahia, Brazil, early in the fiscal year. The only other cases reported were in Africa—Liberia, the Gold Coast, Togoland, Dahomey, Nigeria, and French West Africa. In some parts of this territory the disease was more prevalent than it has been for several years.

CHANGES IN QUARANTINE PROCEDURE

During the past year quarantine officers were authorized to accept as competent evidence, fumigation certificates properly visaed by a United States consul, provided the certificate contains the same, or substantially the same, information as certificates of fumigation of the United States Public Health Service, and, in addition, indicates the treatment of substantially all parts of the vessel, and if, after a thorough inspection of the vessel, the medical officer accepting the certificate is satisfied that the fumigation has been performed in accordance with the requirements of the United States Public Health Service, and that the vessel shows a satisfactory freedom from rat infestation.

In view of the fact that the yield of rats after fumigation of oil tankers is relatively low, the extension of the period between fumigation of such vessels has been authorized, provided, upon actual detailed inspection, they show no evidence of rat infestation. The necessity for fumigating tankers is now based upon the presence or absence of observed rat infestation and not upon previous ports of call or time elapsed since last acceptable fumigation. If, upon inspection, tankers are not frankly free from rats, they will be fumigated. It is expected that this procedure will materially diminish the number of tankers fumigated.

In November of the past fiscal year medical officers of quarantine stations were authorized to begin the use of Zyklon-B in the fumigation of ships. Fumigation with this material not only greatly reduces the amount of equipment necessary, as compared with other fumigants, but allows the work to be done with less personnel and will reduce the cost of fumigation.

Arrangements have been completed for the return of the *Lake Elmdale* to the Shipping Board. This boat has been used for a number of years for detention purposes at Sabine, but now a small building has been leased which will be used for this purpose. It is believed that this plan will be found more economical.

In conformity with the Pan American Sanitary Code, the Public Health Service had printed and is now using the form of bill of health set forth in the appendix of the Code and adopted as the standard bill of health.

Rat Proofing of Ships

During the past year a great deal of time and thought have been given the subject of exemption from fumigation of ships from noninfected ports, provided they show no rat infestation and very slight rat harborage. A number of stations have been authorized to extend experimentally the period between fumigations, provided a careful inspection of all parts of the vessel fails to reveal signs of rat infestation. In order to maintain a vessel in a rat-free condition, or at least to have the rat population reduced to negligible numbers, it is necessary either to fumigate at least every six months or to have the vessel made rat proof, and a great many steamship companies have come to realize in the past year the importance and economic value of rat proofing their vessels.

A new edition of the article on "The rat proofing of vessels" (Reprint No. 1030) was printed during the year, and copies of this article were sent to naval architects and marine engineers. There has been a great demand for this publication, and both the Army and Navy are rat proofing their vessels.

Deratization and Deratization Exemption Certificates

In accordance with article 28, International Sanitary Convention of Paris, 1926, a combined form of deratization or deratization exemption certificate was drawn up and was submitted at the last meeting of the Office International in April, 1927. This certificate was received very favorably and is now in use at a number of our quarantine stations for recording the results of inspections for rat infestation and rat harborage, or fumigations done.

Flea Surveys

At the meeting of the First Pan American Conference of Directors of Health, held in Washington September 27–29, 1926, a committee was appointed to formulate a program for the investigation of plague. This committee consisted of the following members: Dr. Lucas Sierra, of Chile; Dr. Pablo A. Suarez, of Ecuador; and Dr. S. B. Grubbs, United States Public Health Service. The committee recommended that the Pan American Sanitary Bureau request each of its signatory powers to begin in one or more places, preferably ports, a plague survey of rats and fleas. Some of this work has now been started, and reports of these surveys are being received, particularly from Ecuador. Rat-flea surveys are now being conducted in New York; San Juan, P. R.; Savannah, Ga.; and Norfolk and Newport News, Va.

New Quarantine Station at Mobile, Ala. (Sand Island)

The construction of the new quarantine station at Mobile, Ala. (on Sand Island), which was authorized by the act of Congress of February 15, 1925, was completed about June 1, 1927, and quarantine operations are now being conducted at that place. The old station at Fort Morgan is now in the hands of a caretaker.

New Quarantine Station at New Orleans, La.

A site was acquired by the Treasury Department from the New Orleans Steamship Association for a new station at New Orleans, La. This property is known as the St. Claire Gardens and is bound by the public road (fronting on) the Mississippi River, and Richland Road. The purchase price was $30,000.

Cooperation with Other Branches of the Government

In cooperation with the Bureau of Animal Industry in the enforcement of their B. A. I. Order No. 281, for the prevention of the importation of animals from districts designated infected with foot-and-mouth disease and rinderpest, quarantine officers were directed to report to the representatives of that department the arrival at quarantine stations of all vessels with live animals, either as cargo or as ship's stores, originating from prohibited territory, in order that proper steps might be taken to prevent the importation of this disease.

The bureau further cooperated with the Bureau of Entomology in the fumigation of vessels at Galveston, Tex., for the destruction of weevils in shipments of flour. This work was carried on without cost to the service.

Violation of Quarantine Laws

During the fiscal year the department assessed fines aggregating $2,300 for violations of the act of February 15, 1893, because of the failure of masters of vessels to present American consular bills of health.

Summary of Quarantine Transactions at Continental and Insular Stations for the Fiscal Year Ended June 30, 1927

(1) INSPECTIONS

	Total number	Passed free pratique	Passed provisional pratique	Detained	Remarks
Vessels	23, 275	17, 211	5, 843	69	
Seamen	1, 367, 295			1, 982	Includes workaways.
Passengers	990, 254			7, 808	Includes consular and stowaways.

(2) DETENTIONS

	Yellow fever		Rodent plague		Human plague		Cholera		Smallpox		Leprosy	
	Number	Days	Number	Days	Number	Days	Number	Days	Number	Days	Number	Days
Vessels			1	25	7	49	14	28	10	43		
Seamen	4	4	118	885	382	9, 168	1, 011	28, 308	530	854		
Passengers	96	371	71	222	2, 509	60, 216	4, 826	135, 128	395	205½	2	2
Sick					2	114			17	339	2	2

SUMMARY OF QUARANTINE TRANSACTIONS AT CONTINENTAL AND INSULAR STATIONS FOR THE FISCAL YEAR ENDED JUNE 30, 1927—Continued

(3) LABORATORY

Number rats examined	Number fleas classified	Number persons vaccinated	Other examinations (name)
18, 334	8, 520	107, 311	10,970 stool examinations at Manila.

(4) TREATMENT OF VESSELS (FUMIGATING, TRAPPING, REMANDING)

(A) FUMIGATION

	Cyanide	Sulphur	Total
Number of vessels	3, 446	2, 360	5, 806
Cubic feet fumigated	1, 125, 400, 602	452, 789, 211	1, 578, 189, 813
Net tonnage	11, 538, 818	5, 108, 152	16, 646, 970
Number of rats recovered	11, 122	19, 951	31, 073

(B) TRAPPING

Number vessels	Net tonnage	Number traps	Number rats	Rats on Piers
668	5, 564, 597	279, 071	891	119

(C) REMANDS FOR FUMIGATION

	Mandatory vessels	Periodical vessels	For other purposes (give reason)
From other ports	991	345	84 requests.
To other ports	959	393	

(5) RESEARCH

Flea survey at New York quarantine:

Seattle fleas classified	151
Norfolk fleas classified	598
Savannah fleas classified	999
New Orleans fleas classified	786
Total	2, 534

(6) FINANCIAL REPORT

Total amount of bills rendered for quarantine services $639, 289. 36

(7) PORT SANITARY STATEMENTS

Number issued 40, 405

(8) ALIENS EXAMINED

	Total examined	Intensive	Class certified				Total certified
			A-I	A-II	B	C	
Number passengers	89, 222	2, 060	32	163	233	49	477
Number alien seamen	507, 061	191, 463	120	1, 430	331	151	2, 032

TRANSACTIONS AT CONTINENTAL QUARANTINE STATIONS

Summary of transactions at continental quarantine stations for the fiscal year ended June 30, 1927

Stations	Vessels inspected	Vessels fumigated		Passengers inspected	Crew inspected
		Cyanide	Sulphur		
Aberdeen, Wash	68	0	54	6	2,786
Atchafalaya (Morgan City), La	0	0	0	0	0
Baltimore, Md	1,415	450	70	241	43,910
Beaufort, S. C	0	0	0	0	0
Boca Grande, Fla	16	0	1	0	425
Boston, Mass	932	155	0	45,098	67,801
Brownsville, Tex.[1]	0	0	0	2,956	0
Brunswick, Ga	16	0	4	3	468
Cape Fear (Southport), N. C	37	0	28	26	950
Cedar Keys, Fla	0	0	0	0	0
Charleston, S. C	251	0	53	107	7,748
Columbia River (Astoria), Oreg	165	0	112	0	6,320
Coos Bay, Oreg	30	0	28	0	1,061
Corpus Christi, Tex [2]	7	0	0	0	214
Cumberland Sound (Fernandina), Fla	11	0	4	0	365
Delaware Breakwater, Del	5	0	0	0	130
Del Rio, Tex.[1]	0	0	0	1,799	0
Eagle Pass, Tex.[1]	0	0	0	3,991	0
Eastport, Me	356	0	0	12,128	720
El Paso, Tex.[1]	0	0	0	28,978	0
Eureka, Calif	8	1	0	0	267
Fall River, Mass	31	0	0	9	1,041
Fort Bragg, Calif	0	0	0	0	0
Fort Monroe, Va	1,884	0	520	920	70,136
Freeport, Tex	57	0	0	16	1,522
Galveston, Tex	860	213	0	2,183	31,395
Georgetown, S. C	7	0	0	0	56
Gloucester, Mass	0	0	0	0	0
Gulfport, Miss	69	0	29	14	1,966
Hidalgo, Tex.[1]	0	0	0	3,202	0
Jacksonville, Fla	158	0	36	23	5,009
Ketchikan, Alaska	0	0	0	0	0
Key West, Fla	254	0	19	22,444	14,591
Laredo, Tex.[1]	0	0	0	40,440	0
Marcus Hook (Philadelphia), Pa	1,308	44	479	920	44,887
Miami, Fla	672	0	1	13,123	15,660
Mobile, Ala	365	58	39	431	10,121
Monterey, Calif	0	0	0	0	0
New Bedford, Mass	0	0	0	0	0
New Orleans, La	2,281	487	0	14,018	85,440
Newport, Oreg	0	0	0	0	0
Newport, R. I	2	0	0	0	15
New York, N. Y	4,613	0	936	550,199	551,552
Ogdensburg, N. Y	24	0	0	4	468
Pascagoula, Miss	12	0	6	0	88
Pensacola, Fla	134	73	0	13	4,017
Perth Amboy, N. J	64	0	5	1	1,825
Port Angeles, Wash	4	0	1	0	111
Port San Luis, Calif	14	0	0	0	561
Portland, Me	131	0	20	38	4,623
Port Townsend, Wash	293	16	82	8,966	21,581
Presidio, Tex.[1]	0	0	0	429	0
Providence, R. I	60	0	0	6,210	4,274
Rio Grande [1] and Roma,[1] Tex	0	0	0	1,458	0
Sabine, Tex	324	80	0	87	10,375
St. Andrews, Fla	7	4	0	0	127
St. George Sound, Fla	0	0	0	0	0
St. Joseph, Fla	0	0	0	0	0
San Diego (Point Loma), Calif	1,027	7	6	10,240	26,616
San Francisco, Calif	510	422	43	36,042	37,103
San Pedro, Calif	1,370	220	0	13,660	51,324
Santa Barbara, Calif	0	0	0	0	0
Savannah, Ga	126	11	2	82	4,448
Seattle, Wash	0	125	93	0	0
South Bend, Wash	6	0	4	0	242
Tampa Bay, Fla	295	15	58	288	6,536
Vineyard Haven, Mass	5	0	0	0	47
Washington, N. C	0	0	0	0	0
West Palm Beach, Fla	0	0	0	0	0
Total	20,284	3,317	1,797	820,793	1,140,922

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[1] Border stations. Figures do not include local travelers who, however, were subjected to cursory inspection. Through travelers were given close examination.

[2] Opened Sept. 15, 1926.

REPORTS FROM CONTINENTAL QUARANTINE STATIONS

Aberdeen, Wash.—Acting Asst. Surg. J. B. Kinne in charge. Post-office and telegraphic address, Aberdeen, Wash.

This quarantine station serves the three cities of Hoquiam, Aberdeen, and Cosmopolis. Vessels entering these ports were all in oriental lumber trade, practically all loading lumber for Japan. Being lumber-carrying ships, they did not as a rule harbor many rats.

Atchafalaya, La.—Acting Asst. Surg. W. J. McClellan in charge. Post-office and telegraphic address, Morgan City, La.

This port was formerly of some importance, but during the current fiscal year there were no quarantine transactions.

Baltimore, Md.—Surg. H. F. White in charge. Post-office and telegraphic address, Curtis Bay, Baltimore, Md.

The danger of introducing quarantinable diseases into Baltimore is about the average of that found at other North American ports. What danger there is has been met by careful inspection and fumigating when necessary. The station has received the cooperation of the shipping interests in the port of Baltimore and a minimum of delays has been occasioned during the year.

The principal cargoes entering the port of Baltimore are iron and manganese ore from the east and west coast of South America, Cuba, Northern Africa, the Black Sea, and Norway and Baltic ports, crude oil from Caribbean and Gulf ports, paper pulp from the Scandinavian countries and Canada, and fruit from Caribbean and Gulf ports. General cargoes are brought in by vessels having their terminus in Baltimore chiefly from northern European and British Isles ports. Some round-the-world vessels call at Baltimore for final discharge of general cargoes. The passenger traffic has been largely incidental to cargo vessels, these vessels having limited accommodations and carrying a few passengers only.

It has been found necessary to detain neither anyone nor any ship for quarantinable disease during the year. The general sanitary conditions of vessels entering quarantine have been good.

During the first six months of the fiscal year an increase in the average number of ships entering Baltimore, owing to the coal strike in England, taxed personnel and equipment to the limit. Ships on the sea and from almost every port were diverted to this port for cargoes of coal. About 80 per cent of these ships had not been in the American trade during the preceding year and had not been fumigated, or they did not have an acceptable certificate of fumigation; many ships were from mandatory ports. In consequence, fumigations were increased fourfold. The majority of ships requiring fumigation were fumigated with cyanogen chloride gas. Ships due for periodic fumigation and found to be free from rats, by inspection, were given an extension of time and allowed to enter under provisional pratique.

During the first six months a total of 1,122 ships arrived in quarantine, of which 393 were fumigated. These figures represent about 78 per cent of the total number for the year. Of the ships entering quarantine during the six months ending June 30, 1927, about 75 per cent were found to have been constructed since 1917 and did not furnish as many rat harborages as ships which had been built prior to that date. They were clean. and upon careful inspection before fumigation were found to be free from rats. Upon subsequently fumigating these ships no rats were found during the usual methodical search.

During the latter half of the fiscal year Zyklon–B has been used routinely as a fumigant. A total of 115 ships were so fumigated. It is an excellent fumigant and has many advantages over other fumigants; it requires a crew of three instead of four; and the time required to fumigate and clear a ship is reduced from an average of 4 hours and 15 minutes to 3 hours and 15 minutes, reducing thereby the cost of fumigation proportionately. Boat property can be maintained in better condition, and less storage space on the station is required. The results have been equal to, if not greater than, those obtained when other methods of fumigation are employed.

During the fiscal year there has been installed a fire-protection system, consisting of a steel tower and storage tank, 5,000 gallon capacity, and a complete underground piping system leading to 10 fire plugs. Hose boxes have been placed at each plug, with hose and nozzles attached, ready for instant use.

A new Diesel tug, the *John M. Eager*, was put in commission during the year. The new boat has been in daily use and has been found to be economical in every respect. It is operated by a crew consisting of a pilot, engineer, and deck hand. The boat is 50 feet long by 12 feet beam and 6 feet draft, of heavy construction, and is seaworthy. It is easily handled and appears to be an ideal boat for quarantine purposes. It replaces the steam tug *McClintic*, which required a crew of seven men to operate and maintain and which consumed a large amount of fuel in order to keep up steam constantly. The actual comparative costs of operation for the *Eager* and the *McClintic*, including personnel, for six months are, $2,181 and $5,222, respectively.

The gasoline launch *Q–3* has been overhauled and has been used as an emergency fumigating and boarding boat.

Beaufort, S. C.—Acting Asst. Surg. Christopher G. Hay in charge. Post-office and telegraphic address, Beaufort, S. C.

The Beaufort Quarantine Station principally serves the ports on Port Royal Sound, formerly of importance in the export lumber trade. During the current fiscal year there were no transactions at this station.

Boca Grande, Fla.—Acting Asst. Surg. H. P. Bevis in charge. Post-office and telegraphic address, Boca Grande, Fla.

The business of the port of Boca Grande is exclusively the exportation of phosphate rock, which is shipped to nearly all the principal countries of the world in steamships of the tramp type. These vessels are all of fairly large size, being from 1,800 to 3,000 net tons, and are usually well kept. Some vessels arrive loaded with part cargo; and when it is not possible to fumigate a vessel on account of cargo, she is breasted off from the dock, rat guards are placed on all lines, and gangways are raised or guarded under supervision.

Boston, Mass.—Surg. A. R. Sweeney in charge. Post-office and telegraphic address, Gallops Island, Boston, Mass.

During the fiscal year nine members of crews were detained, five for suspected smallpox and four for diagnosis. One vessel was detained overnight. Of the passengers inspected in quarantine, 25 per cent were examined intensively for vermin infestation and 18 were found to be infested and were appropriately treated.

Fumigation of vessels is usually done at the docks in Boston; occasionally at the quarantine anchorage. A total of 732 rats were recovered. Of these, 5 were *Rattus norvegicus*, 307 *Rattus alexandrinus*, and 420 *Rattus rattus*. All rats recovered were examined for plague. Guinea-pig inoculations from 10 per cent of the rats were made. None were found to be plague infected.

The principal commerce at this port, as regards quarantine, consists of general cargo imports and fairly heavy trans-Atlantic passenger traffic. Many of the freight vessels arrive with imports not only for this port but for several other United States ports, which accounts for the large number of vessels remanded to other stations for fumigation following complete discharge of cargo. Most of the passenger vessels entering this port are finally destined to New York, this being the first port of call. In view of the widespread prevalence of plague and the large number of vessels from plague-infected ports entering here the menace from this disease is apparent. The rat proofing of vessels entering this port would mean practical preventive efforts against the introduction of plague, especially valuable under these conditions.

Brunswick, Ga.—Acting Asst. Surg. R. E. L. Burford in charge. Post-office and telegraphic address, Brunswick, Ga.

Foreign commerce has increased at this port, but first entry of the majority of vessels was in other United States ports, making coastwise entry for this port. Vessels with cargo, coming direct from foreign ports, were from Mexico, Cuban ports, Germany, and ports of England.

Rat infestation of tank vessels with oil cargoes was negligible. This type of vessel entering this port had been given periodic fumigations and were rat free. Steamships with cargoes of nitrate show rat infestation to a greater or less degree. It was observed that in all classes of vessels and cargoes rat infestation was much less than formerly.

Charleston, S. C.—Surg. J. H. Oakley in charge. Post-office and telegraphic address, Charleston, S. C.

The foreign commerce of this port consists principally of vessels bringing in crude oil from Mexico, Peru, and Colombia, nitrate of soda from Chile, bananas from Central America, and general fertilizing material from Germany and Belgium. Occasionally a vessel brings jute from India, and there have been a few vessels from Nova Scotia with pulpwood.

Most of the vessels are considered relatively safe quarantine risks, having complied with rules and regulations at ports of departure, and having been fumigated regularly, excepting vessels from rat-plague infected ports, especially those few from India, which are kept under surveillance while in port.

Corpus Christi, Tex.—Acting Asst. Surg. M. J. Perkins in charge. Post-office and telegraphic address, Corpus Christi, Tex.

Following extensive dredging operations and the erection of warehouses, docks, etc., Corpus Christi was opened as a port on September 16, 1926. To guard against the importation of diseases from abroad, Acting Assistant Surgeon Perkins was appointed as quarantine officer of the port. Through the courtesy of the Customs Service, the quarantine officer accompanies the customs boarding officer in boarding vessels on a launch used by that officer.

The principal cargoes entering the port are iron and steel products, asbestos shingles, and crude oil. Some of these are part cargoes en route. The major portion of commerce entering the port is coastwise; the principal business is exports.

Cumberland Sound, Fla.—Acting Asst. Surg. D. G. Humphreys in charge. Post-office and telegraphic address, Fernandina, Fla.

The total number of foreign vessels arriving at the port of Fernandina was 11. Most of the ships entering this port carried water-ballast cargoes, therefore were nonrat-attractive.

Delaware Breakwater Quarantine Station.—Acting Asst. Surg. William P. Orr in charge. Post-office and telegraphic address, Lewes, Del.

Owing to change in commercial practice, the need for the Delaware Breakwater Quarantine Station has ceased to exist, and during the fiscal year the station was dismantled and abandoned. Useful movable property was transferred to other stations. The station was constructed on land retained under revocable license from the State of Delaware, which site will be returned.

While the detention facilities have been discontinued, boarding, inspection, and fumigation facilities will be continued for vessels from foreign ports entering the port of Lewes, Del. In the past few years these have been few in number.

Eastport, Me.—Acting Asst. Surg. John E. Brooks in charge. Post-office and telegraphic address, Eastport, Me.

Three hundred and fifty-six vessels entered this port during the year. All but two of these vessels were from Canadian ports. One was from Newfoundland and another from Turks Island. Cargoes are general merchandise. One vessel carried salt from Turks Island.

Fall River, Mass.—Acting Asst. Surg. Thomas Cox in charge. Post-office and telegraphic address, 1244 Pleasant Street, Fall River, Mass.

During the fiscal year ending June 30, 1927, a total of 31 vessels arrived. The crews of these ships numbered 1,041 persons. Nine passengers were carried. These ships were all oil tankers sailing from various Mexican and Caribbean ports, and, owing to the character of the cargo, the attending quarantine risks were slight.

Fort Monroe, Va.—Surg. H. E. Hasseltine in charge. Post-office and telegraphic address, Craney Island, Norfolk, Va. This station serves the ports of Norfolk and Newport News, Va.

No vessels arrived with quarantinable disease on board and no detentions of suspects were made. The vessels arriving at this port during the year can be divided into three general classes: (1) Vessels arriving in ballast to load cargoes of coal. This class constituted about 75 per cent of all vessels that arrived during the first half of the fiscal year, while in the last half of the year they have been very few in number. (2) Cargo-laden vessels calling here to take bunker coal and then proceeding to some other port to discharge cargo. This class constitutes approximately 50 per cent of the vessels that arrived here in the last half of the fiscal year. (3) Vessels that will load or discharge cargo, other than coal, in this port. Vessels of this class bring the following cargoes: Nitrates from South American ports; china clay from northern Europe, ores from South American and African ports, logwood from West Indian and Caribbean ports, pulpwood and lumber from Canadian ports, oils from Mexican ports, and general cargo from various ports of the world.

The average quarantine risk at this port is probably less than at most ports, because of the large number of vessels that touch only at outlying coal piers. These piers are built high in the air on open-steel framework, to facilitate dumping of coal in carload lots. These docks offer a minimum of rat harborage and rat food. A vessel is usually bunkered, or loaded with a cargo of coal in a few hours.

In view of the remote probability of needing detention space for more than one vessel at a time, a small but complete detention unit is maintained ready for use in one of the large brick buildings at Craney Island. The balance of the detention facilities are kept in reserve status. Six individual rooms in another building have been set aside for hospital purposes. As nearly all vessels arriving at this port are freight vessels which carry crews averaging about 60 men, this detention space is deemed ample for the station's immediate needs. This arrangement greatly increases the ease of handling any ordinary number that may require detention and will greatly reduce the cost of heating, subsisting, and otherwise maintaining those that must be detained.

Over 80 per cent of the quarantine transactions took place in the first half of the fiscal year. This unusual activity in shipping was a result of the coal miners' strike in England. This increased activity brought many types of ships under various flags to this port to load cargoes of coal. Most of them arrived in ballast and many had no record of having been fumigated. During the month of July, 1926, a total of 160 vessels were fumigated with sulphur dioxide at this station.

The experience of this station during the past year has brought into bold relief the shortcomings of routine fumigation for the destruction of rodents according to a time period for various classes of ports, without due regard to the actual necessity. The inspection of ships for evidence of rats was made, and those found to be in need of fumigation were fumigated, the others being excused. This procedure demonstrated the soundness of the policy of making the evidence of rat infestation and the presence of rat harborage a partial basis of fumigation requirements.

Closely linked with this is the rat proofing of vessels, designed to do away with rat harborages and thereby eliminate rats from the vessels. It is believed that the application of rat-destructive measures (fumigation) only to vessels found to be rat infested or offering rat harborage, will cause shipmasters to strive more diligently to keep the rat population of their vessels at a minimum and eliminate much of the danger of transmission of plague from port to port. One of the largest shipbuilding concerns in the country, located here, was given, upon request, information and advice on the subject of rat proofing. The interest shown by this shipbuilding concern indicates that the rat proofing of ships at the time of their construction will be found practicable and feasible.

During the last quarter of the fiscal year a rat-flea survey was carried on in the port of Norfolk. This will continue throughout at least the first three quarters of the coming year. From March 16 to June 30, 1927, 636 rats were trapped and a total of 1,170 fleas were taken from these rats. Determination of the species of fleas thus taken is being made in order to ascertain the relative prevalence of the various species of fleas found on rats in the port, constituting useful information in connection with the prevention of the introduction of plague.

Galveston, Tex.—Surg. W. H. Slaughter in charge. Post-office and telegraphic address, Galveston, Tex.

All vessels from foreign ports destined to Galveston, Houston, Texas City, and other points on the Houston ship channel are inspected in the Boliver Roads anchorage just off the quarantine station.

Comparatively few vessels engaged in foreign trade on arriving at this station carry passengers, practically all the vessels being cargo carriers. Of the ships entering, a vast majorty came in ballast or only partly loaded, since Galveston is mainly an export rather than an import trade center. In the import trade the principal articles brought in were bagging, ties, fruits, cast-iron pipes, raw sugar, and burlaps. The main items handled in the export trade were cotton, wheat, and sulphur. Approximately 20 per cent of all ships inspected were tank steamers used in the export trade of oil and oil products.

Georgetown, S. C.—Acting Asst. Surg. W. E. Sparkman in charge. Post-office and telegraphic address, Georgetown, S. C.

Of seven vessels arriving from foreign ports at this port during the fiscal year, all have come in with clean bills of health, and it has not been necessary to detain a single ship or any member of a crew for quarantinable disease.

Gulfport, Miss.—Acting Asst. Surg. C. A. Sheely in charge. Post-office and telegraphic address, Gulfport, Miss.

As in previous years, quarantine inspection was conducted in the channel off Gulfport, Miss., and the detention station at Ship Island was maintained under the charge of a caretaker. In order to obtain a permanent title to the land used for a quarantine station on Ship Island, an engineering survey was made last year. By Executive Order No. 4585, dated February 15, 1927, the land necessary for a quarantine station on Ship Island, heretofore used under revocable license from the War Department, has been permanently transferred to the Treasury Department for the use of the Public Health Service as a quarantine station.

Jacksonville, Fla.—Acting Asst. Surg. R. S. Wynn in charge Post-office and telegraphic address, Jacksonville, Fla.

The actual workings of the station have changed very little during the past fiscal year, the boarding, inspection, etc., being carried out in the usual manner. No important changes have been made, with the exception of moving the station from the municipal dock to the engineer's dock, a distance of about 1,000 feet farther down the river. Here the facilities of both the dock and warehouse of the United States Engineers are available, an improvement over the former location.

The arriving cargoes from foreign ports are principally fertilizer material and oil. The type of vessels, from a quarantine standpoint, are good, with the exception of a few schooners which usually arrive at this port in ballast and load lumber here for Central American ports.

Key West, Fla.—Acting Asst. Surg. J. Y. Porter in charge. Post-office and telegraphic address, Key West, Fla.

The greater part of foreign commerce entering this port comprises passenger vessels from Cuba, oil tankers from Mexico, fruit and turtle schooners from Central American ports, and a few vessels from European ports calling for bunkers and stores. The latter do not officially enter, as they remain in port but a few hours and have little or no communication with the shore.

The quarantine risks at this port at present are moderate, and such as exist are met by strict compliance with the quarantine laws and regulations. During the year there were two technical violations of the quarantine laws.

During the year the hulk *Wistaria*, formerly used for detention purposes, was condemned and sold and the station is at present without detention facilities.

Marcus Hook, Pa.—Surg. H. M. Manning in charge. Post-office and telegraphic address, Marcus Hook, Pa.

The quarantine station at Marcus Hook, Pa., about 20 miles below Philadelphia, is the administrative, boarding, and partial detention station for the ports of Philadelphia, Pa., Chester, Pa., and Wilmington, Del., taking care also of vessels destined to subports in New Jersey on the Delaware River. Additional detention facilities are maintained at Reedy Island, 20 miles below Marcus Hook. A fumigation office is maintained in the customhouse, Philadelphia, from which port sanitary statements are also issued.

There has not been much change in the general character of foreign commerce at this port during the last two or three years, the majority of ships being oil tankers and vessels employed in the sugar and fruit trades. There are also a number of large tramp ships which carry iron ore, cork, mangasite, etc., and some regular trans-Atlantic freight lines which bring in general cargoes; these boats and the fruit boats also carry some passengers. During the year no regular line passenger vessel entered this port.

On October 28, 1926, the British steamship *City of Florence*, from Rotterdam, London, Dunkirk, and Glasgow, arrived with a Lascar fireman ill of smallpox, who was removed to the station hospital. On November 3 two more Lascars showed evidence of smallpox and were removed from the ship, making a total of three cases from this vessel. The disease was of a mild form.

On April 4 two members of the crew of the steamship *Canova*, fruit steamer from Jamaica, were removed and held for observation for two days for smallpox. Nothing having developed, they were returned to the ship, which had been permitted to proceed to Philadelphia to discharge cargo after all on board had been vaccinated.

A storm of unusual severity swept the station in the fall of 1926, demolishing a comparatively new 1,000-foot stone sea wall and doing considerable damage to the gangway leading to the wharf. The roofs on some of the buildings were damaged and windows were broken. It was necessary to employ additional labor to remove the débris. The buildings were repaired, but neither the sea wall nor the gangway has as yet been rebuilt.

During the coal strike in England last fall there was a marked increase in the number of ships at this port to load coal. Cyanide fumigation has not been fully established at this port as yet, except in the case of tankers. Sulphur is still used in nearly all fumigations.

About 30 vessels were inspected for rat infestation during the coal-strike period in Liverpool, when plague was reported at that port. The majority of these were passed after inspection. Other ships have been inspected for rat infestation during the year and were passed or fumigated in accordance with the findings. The extending of fumigation periods based in part upon an inspection for rats or signs of rat infestation seems to be a very satisfactory procedure to all concerned.

Miami, Fla.—Acting Asst. Surg. F. R. Maura in charge. Post-office and telegraphic address, Miami, Fla.

The quarantine activities at this port show an increase, as compared with the preceding year.. Boarding of vessels continues to be done at the docks, as there is no quarantine anchorage available. The majority of vessels entering this port are from the Bahamas and Cuba. During the fiscal year no quarantinable diseases were encountered and no vessels, crews, or passengers were detained.

Mobile, Ala.—Surg. C. H. Waring in charge. Post-office address, Mobile, Ala. Telegraphic address, Sand Island, Ala.

A modern quarantine station was constructed on Sand Island, at the mouth of Mobile River, and was occupied June 1, 1927. The buildings are of substantial reinforced-concrete construction and specially made building tile, except in the case of living quarters, in which brick was used in place of tile. Wharves for the use of station floating property were constructed of creosoted piles and timbers and are substantially made. A group of five dolphins, made from creosoted piling, was placed parallel to the main ship channel for the purpose of tying up ships that it might be necessary to hold.

Water is furnished the station by the city of Mobile through a submarine water main laid under the channel between the island and Choctaw Point, the nearest mainland. Electric current and telephone service are had through submarine cables from the city.

Such equipment as could be utilized was moved from the old station at Fort Morgan, the balance being purchased from the special construction appropriation, of which $40,000 had been set aside for that purpose.

Vessels from practically all parts of the world enter this port, probably the larger number being from South and Central America. Vessels engaged in passenger-carrying trade are very few, except those of the United Fruit Co. That company operates from this port small ships of foreign registry under charter. Cargo vessels using this as a home port are of four types—pre-war vessels, usually old; those constructed for the Government during the World War; oil tankers; and schooners.

The pre-war ships have steel hulls and double ceilings, etc., and are so constructed that rat harborage is usually extensive and expensive to eliminate. Those ships constructed for the Government during the war could have the rat harborages eliminated fairly easily, but as they are leased by the operating companies for short periods only, such companies are not interested, because the expense would have to be borne by themselves.

Oil tankers harbor very few rats. During the past two years not a single rat was found on vessels of this type after fumigation at this port. A few tankers coming from rat-infested ports were carefully inspected here during the past year, but no evidence of rat infestation was found. A fairly large proportion of the number of vessels entering are of the schooner type. These have wood hulls with continuous holds, inside sheathing, and wooden flooring in holds, and are difficult of fumigation except with sulphur, and afford extensive rat harborage. Fortunately few of this type of vessel engage in other than island trade, so are not as great a potential menace as if they went into plague-infected ports. Practically all other vessels are steel and can be fumigated to good advantage.

The diseases causing the greatest quarantine risks at this port are plague, yellow fever, and smallpox, but as yellow fever has been almost nonexistent in the Southern Hemisphere during very recent years, that disease as a risk is very slight. A close observation of passengers and crew is necessary, however, as the Stegomyia mosquito is ever present at this port.

New Orleans, La.—Surg. D. C. Turnipseed in charge. Post-office and telegraphic address, New Orleans, La.

As during the preceding two years, vessels have been boarded at both Quarantine, La., and at the city of New Orleans. The greater part of the inspection and fumigation of vessels is performed at the city quarantine anchorage, while the station at Quarantine, La., is principally kept in reserve for detention purposes. Two quarantine launches are maintained in operation at New Orleans and one is kept at Quarantine, La.

The station at Quarantine, La., is maintained in a state of preservation and repair sufficient to provide ample facilities for the detention of passengers and crews of vessels for quarantine purposes. A medical officer and five attendants are on duty here, both to keep up the station and to perform such inspections of vessels as are required. The buildings at Quarantine, La., with the exception of the two previously used as leper barracks, are in a good state of preservation.

There has been a substantial increase in the amount of commerce entering the port of New Orleans during the past fiscal year. The principal cargoes arriving here are nitrates, sugar, bauxite, molasses, fruit, and oil.

On account of the principal cargo-vessel trade at this port with tropical, far eastern, and Mediterranean ports, four of the quarantinable diseases are to be especially guarded against, viz, yellow fever, smallpox, plague, and cholera. From April 1 to October 31, for the purpose of yellow-fever prevention, temperatures of persons arriving at Quarantine are taken, and all cases of fever of undetermined origin are held for observation and diagnosis. All vessels arriving with any sickness aboard are required to stop at Quarantine, La., for inspection and are held if necessary.

During the past year three vessels arrived with quarantinable disease on board. On two of these vessels there were cases of smallpox. The patients were removed and isolated, the crews vaccinated, and the vessels fumigated. On account of an increased prevalence of smallpox during the past year, all service personnel on duty at the station were revaccinated.

The third vessel, the Japanese steamship *Manila Maru*, arrived at the lower quarantine station with two cases of human plague and cases of rodent plague aboard. This vessel was allowed to proceed to New Orleans after all steerage passengers and such of the crew as were not essential to the navigation of the vessel had been removd for detention and observation. The cabin passengers were removed to the hospital in New Orleans for observation. The two human cases of plague were also placed in isolation at the hospital. The vessel was kept in strict quarantine at anchor on the quarantine anchorage grounds in New Orleans, and all cargo was required to be discharged into lighters. Four fractional fumigations with cyanide gas (amount of gas and time of exposure being doubled) were performed during the time that the cargo was being discharged, under service supervision, into lighters. The lighters were also fumigated subsequent to being loaded. A final fumigation of the vessel after all cargo was removed was performed. Five rodents were recovered as the direct result of the last fumigation, notwithstanding the amount of gas and the time of exposure of the four previous loaded fumigations. A total of 431 rodents were recovered from the vessel, 23 of which were determined to be plague infected. During the discharge of cargo under supervision, a very comprehensive and complete rat-proofing survey of the vessel was made, and carpenters effected temporary changes which materially aided in the final fumigation after discharge of cargo had been completed.

A serious menace of bubonic plague to the health of the port exists in the round-the-world vessels making New Orleans a port of call. The above-named vessel, the *Manila Maru*, was a fair example of this menace. Immediately following this experience, a program of extensive and thorough rat-proofing surveys of all such vessels, by trained personnel, was inaugurated. Copies of recommendations for the rat proofing of not only the *Manila Maru* but all vessels of this class were furnished the agents and owners concerned, and their cooperation was sought and obtained. Although the above-mentioned vessel has not yet returned to this port, it is understood that extensive alterations in rat-proofing measures have been completed. Other vessels of this line (Osaka Shoken Kaisha) recently calling at this port have complied with recommendations made along this line and presented good examples as to what can be accomplished by rat proofing. As a result no evidence of rats was found on board upon inspection and none recovered after fumigation.

New York, *N. Y.*—Surg. Carroll Fox in charge. Post-office address, Rosebank, Staten Island, N. Y. Telegraphic address, Quarantine, N. Y.

The administrative, boarding inspection, laboratory, and fumigation headquarters of the station are located at Rosebank, and the hospital and detention units are located at Hoffman Island 3 miles below the station. An office is also maintained in the customhouse for the issuance of port sanitary statements to outbound vessels. During the year the inspection station at Perth Amboy, N. J., was placed under the supervision of this station.

The activities of the station are effected through nine divisions—1, boarding; 2, laboratory; 3, hospital and detention; 4, fumigation and ship inspection for rat infestation; 5, rat proofing of vessels;

6, personnel and accounts; 7, material; 8, building, grounds, and mechanical equipment; 9, floating property division.

The boarding division for quarantine inspection is under the immediate charge of a medical officer. In addition, three medical officers are regularly assigned to quarantine inspection and there are two medical officers assigned from Ellis Island for the medical inspection of alien seamen and occasional passengers on cargo vessels, who also assist in the quarantine inspection of such vessels. One additional officer is usually on duty at this station for instruction in quarantine procedure and so serves as relief officer. One female and two male inspectors are assigned to assist in the examination of incoming alien passengers.

The work of the laboratory staff consists of (*a*) boarding vessels arriving in quarantine on call from medical boarding officers for the performance of such laboratory tests as may be indicated; (*b*) examining rats, secured by fumigation and trapping vessels, for plague; (*c*) other laboratory examinations as indicated in accompanying table; (*d*) special investigations. Under special investigations of quarantine importance, the laboratory division has continued the identification and classification of fleas and other ectoparasites secured from live rats trapped at this and other stations. During the year specimens were received from Savannah, Norfolk, New Orleans, San Juan, and Seattle, and detailed reports are returned to the stations submitting specimens. Standard forms for the recording of data obtained in making rat flea surveys were prepared and adopted for use during the year. As a result, various surveys conducted under the supervision of the service will contain identical data and be susceptible of easy comparison. These forms were approved by a committee of the Pan American Sanitary Conference, and in one instance at least were translated into Spanish and are being used in a South American country.

During the year considerable work was also done in an effort to determine the applicability, to ship fumigation, of a chemical test for determining the amount of hydrocyanic gas remaining in compartments toward the end of ventilation. Both the benzidine acetate and the methyl orange-mercuric chloride tests were studied, but while both are highly sensitive to hydrocyanic acid fumes, neither was found to be yet of practical application in ship fumigation. For the present the use of small test animals and human sense perceptions will be continued to determine when a given compartment has been sufficiently ventilated to permit safe entry.

Examinations performed by the laboratory division

Total rats examined	10, 085
Total fleas examined	8, 605
Rats found plague infected	0
Guinea-pig inoculations	826
Weil-Felix reactions performed (negative)	2
Smallpox vaccinations performed	105
Smallpox vaccinations inspected	74
Blood counts made	2
Blood smears examined for malaria	1
Examination of pus from buboes	2
Specimens of urine examined for clinical diagnosis	12
Tests for Widal reaction	3

Cultures examined for diphtheria	3
Sputum examined for tuberculosis	1
Triple typhoid vaccination administered	3
Vessels boarded by laboratory officer	24

Classification of fleas collected from rats fumigated on vessels in New York Harbor

X. cheopis	4,436
C. fasciatus	336
L. musculi	44
C. canis	2
Total	4,818

Classification of fleas and other ectoparasites collected from live rats

Ectoparasites	New York	Savannah	Norfolk	New Orleans	San Juan	Seattle
X. cheopis	4	865	192	762	394	31
C. fasciatus	92	356	403	0	4	75
L. musculi	2	452	3	16	0	45
E. gallinacea	0	30	0	0	44	0
C. canis	1	5	0	8	2	0
P. irritans	0	0	0	0	1	0
Total fleas	99	1,708	598	786	445	151
L. echidninus	25	18	281	23	0	0
L. bacoti	0	9	2	3	0	0
P. spinulosa	0	2	20	0	0	0
L. hawaiiensis	0	17	0	0	0	0

The hospital and detention division maintains the hospital, detention barracks, and disinfection plant on Hoffman Island. During the year five persons were detained at Hoffman Island on account of suspected quarantinable disease. One passenger was kept under observation for 10 days on account of suspected yellow fever. One fireman on a fruit vessel from Jamaica was detained for 16 days on account of smallpox. Passengers and crew of the vessel not giving satisfactory evidence of recent vaccination were vaccinated before the vessel was allowed to proceed. Two third-class passengers were deloused and their baggage fumigated with cyanide. In addition a total of 118 persons were deloused on board vessels at quarantine during the fiscal year, thus avoiding detention of the vessel for one or two infested passengers aboard.

The fumigation division is under the immediate direction of a medical officer and exercises three major functions—(1) the inspection of vessels to determine the degree of rat infestation; (2) fumigation of vessels; (3) rat trapping of vessels and water fronts for control data. The personnel of the fumigation division consists of a medical officer in charge, 3 medical officers in direct charge of fumigating crews, 2 inspectors for rat-infestation inspections, 1 clerk, 3 fumigating crews, each comprising a foreman and 4 fumigators, and a rat-trapping crew of 1 foreman and 3 trappers.

Eight hundred and eighty-seven vessels, aggregating 2,810,627 net tons, were fumigated with hydrocyanic-acid gas by the following methods:

	Vessels
Zyklon-B (HCN 86 per cent to 98 per cent plus chloropicrin 5 per cent)	243
Liquid hydrocyanic acid-cyanogen chloride mixture	417
Barrel generation method; hydrocyanic acid-cyanogen chloride mixture	227

In addition to the above, 49 vessels were fumigated by other agencies under the supervision of this station.

The gas masks used during fumigation are equipped with standard anticyanide-cyanogen chloride canisters furnished through the Chemical Warfare Service. Carefully timed exposure tests conducted with new masks and canisters indicate that full protection against hydrocyanic-acid gas and the irritator gases used is assured for about 11 hours of actual exposure. In station and shipboard tests the exposure to gas (concentrations varying from 1 to 2 ounces HCN per 1,000 cubic feet) was not continuous, but in a period of three months canisters were exhausted after approximately 11 hours' actual use, representing numerous brief exposures of from one to five minutes.

The significant changes in fumigation procedure at this station occurring during the fiscal year 1927 are:

(1) Reduction in the total number of vessels fumigated as a result of basing the necessity for fumigation on the known presence of rats as demonstrated by inspection.

(2) Marked reduction in number of fumigations by generation method of producing HCN-CNCl gas mixture with proportionate increase in the number of fumigations with Zyklon–B and liquid hydrocyanic acid-cyanogen chloride mixture.

In September, 1926, the practical application of a system of inspection to determine the degree of rat infestation of vessels, which had been worked out by Surg. C. V. Akin and Acting Asst. Surg. G. C. Sherrard, was experimentally adopted. During the remaining nine months of the year 765 vessels were inspected, of which number 456 were found not to require fumigation on account of the absence of evidence of rats. The saving in time and expense to the vessels concerned is obvious, and there is much satisfaction in the realization that through rat-infestation inspection by specially trained inspectors fumigation is becoming a specific protective measure rather than a blanket procedure.

The rat-trapping squad consists of a foreman and three trappers, using both cage and snap traps. Snap traps in the proportion of 60 traps per 1,000 net tons are used on shipboard to control the results of fumigation, rat-proofing measures, and inspection for rat infestation. Cage traps are used on docks and water-front properties to collect live rats, desired both as control information and for flea statistics. Owing to the overwater construction of piers at this port and the rapid turnover of storage therein, the results of dock trapping have been most disappointing, only 95 live rats having been so secured during the year.

A division of rat proofing was inaugurated during the year with an experienced officer in charge, owing to the importance of the movement to rat-proof vessels, and in view of the rapid increase in the demand for such work from shipping interests. Five trained inspectors are constantly engaged in surveying vessels and in directing and supervising the progress of rat-proofing work on ships while in port accomplished by the vessel owners.

During the year many additional steamship lines manifested interest and requested that surveys be made of their vessels. Naval architects and shipbuilding companies became interested, and several requested conferences and demonstrations. The officer in charge of rat-proofing activities was sent to Philadelphia and Newport News for the purpose of conferring with technical shipbuilding experts and to demonstrate the method of incorporating rat-proofing principles in the plans of vessels then under construction. Requests for information regarding rat proofing were received from officials of foreign governments and foreign shipbuilding firms. The work was demonstrated to public-health representatives of the Governments of Bulgaria, Rumania, Canada, Chile, Bolivia, Colombia, Equador, and Venezuela.

The War Department, through the office of the Quartermaster General, has advised that rat-proofing measures, as outlined in Public Health Reprint No. 1030, were being initiated on the vessels of the United States Army Transport Service.

The Navy Department has shown considerable interest in rat proofing and has requested a sufficient number of copies of Public Health Reprint No. 1030 to supply one to each naval vessel.

Several distinguished representatives of foreign governments have visited the station for conference or demonstration, and a committee from the Pan American Sanitary Conference came from Washington, D. C., to study the method proposed by the service for conducting rat-flea surveys.

One of the most important functions in connection with the rat proofing of vessels has been the training of service officers and sanitary inspectors in this new phase of quarantine activity. Officers and inspectors receiving training in rat proofing were temporarily detailed from the quarantine stations at Boston, Philadelphia, Baltimore, Norfolk, Savannah, New Orleans, Galveston, and San Francisco.

A total of 25 medical officers, 1 administrative assistant, and 4 sanitary inspectors have been given regular courses of instruction varying in length from one to six weeks.

The model of the rat-proofing ship, which was exhibited at the Sesquicentennial Exposition at Philadelphia, from July to December, 1926, was returned to New York in May, 1927, and placed on exhibition in the Maritime Exchange for two weeks for demonstration purposes. Small working models, showing in detail how typical corrections of rat harborage in various sections of ships are made, have been constructed and distributed to several of the larger quarantine stations for use in demonstrating rat proofing.

At the close of the last fiscal year, 74 vessels had been surveyed for rat proofing, and work was actually under way on 26 of them. During the present fiscal year 152 surveys were completed and satisfactory progress in rat-proofing work was under way on 82 vessels.

Rat-proofing measures are being carried out on a number of vessels engaged in round-the-world freight service. Surveys are made and the work is started during the stay of these vessels at New York. The master is furnished with a detailed list of corrections to be made and carefully instructed how to do the work indicated. It is planned that much of the work on these vessels will be done en route, and trained officers now available at several United States quarantine stations will inspect the progress of rat proofing on such vessels as they proceed from port to port.

During the fiscal year, 15,884 port sanitary statements were issued through the station office in the customhouse in New York City. Statements of charges for inspection and fumigation of vessels forwarded to the collector of customs for collection totaled $197,851.99.

Ogdensburg, N. Y.—Acting Asst. Surg. R. L. Stacy, medical officer in charge. Post-office and telegraphic address, Ogdensburg, N. Y.

The Ogdensburg quarantine station serves all vessels from foreign ports bound for United States ports on the Great Lakes. It is simply a boarding station for quarantine inspection and fumigation. There are no facilities maintained for detention or hospitalization. Inasmuch as practically all arriving vessels are loaded with cargo, it is impracticable to fumigate them, and they are remanded to various United States ports with provisional pratique, requiring fumigation following discharge of cargo when necessary.

All of the vessels that entered this port were freighters of either British or Norwegian registry. The cargoes in no case were of a dangerous character, and the quarantine risks at this port are very small. All of the vessels inspected came from either British or Scandinavian ports. During the fiscal year no vessel arrived with quarantinable disease on board and none was detained for that cause.

This station experiences some difficulty in the matter of bills of health. The Canadian quarantine officials, who board these vessels at Father Point on the St. Lawrence before their arrival here, make it a practice to take up all bills of health. In several cases vessels have entered this port with no papers at all. The matter has been brought to the attention of the Canadian authorities by the collector of customs to simplify matters at this station and make it unnecessary to detain vessels here pending the receipt of the bills of health from the Canadian authorities.

Pensacola, Fla.—Acting Asst. Surg. C. W. D'Alemberte, medical officer in charge. Post-office and telegraphic address, Pensacola, Fla.

Boarding for quarantine-inspection purposes and fumigations are done at this station from the city office. The quarantine station on Santa Rose Island, about 8 miles down the bay, is maintained in reserve for hospitalization and detention purposes. The type of vessels entering this port are usually steamships, with an occasional sailing vessel, these vessels coming from all parts of the world.

On the vessels examined during the year no quarantinable condition was found to exist. No detentions were necessary, as no quarantinable disease or contacts were encountered.

Damage to station buildings and equipment caused by the tropical hurricane September 20, 1926, was repaired, and the station is now able to accommodate such cases of quarantinable diseases and contacts as may be encountered at this port.

Port Angeles, Wash.—Acting Asst. Surg. F. T. Hyde, medical officer in charge.

The quarantine activities at this station continue to show a decline from previous years because very little lumber continues to be carried from this port in sailing vessels. The lumber and lumber products now are carried in steam vessels which usually come here from United States ports for finishing their cargo. It is not likely that the quarantine work will increase, as most of the work formerly was done in connection with sailing vessels, arriving in ballast from foreign ports, which are rapidly disappearing from the seas.

During the fiscal year no vessels arrived with quarantinable disease on board and none was detained.

Port San Luis, Calif.—Acting Asst. Surg. T. S. Long, medical officer in charge. Post-office and telegraphic address, San Luis Obispo, Calif.

The port of San Luis, where quarantine inspections are made, is located in the town of Avila, approximately 10 miles west of the city of San Luis Obispo, and does not have any Government buildings or other property for the purpose of carrying on quarantine transactions. This port is a small one and primarily an oil port. There is, however, a freight and passenger steamer which makes regular trips in the coastwise trade.

The type of quarantine work done at this port so far has been entirely with oil tankers—ships of from 4,000 to 6,000 tons—carrying crude oil and its products to New Zealand, Chili, Canal Zone, Nicaragua, Honduras, etc. As a whole, these ships are kept extremely clean, and are not considered good hosts for the harboring of rats or insects.

There has been no occasion to hold a vessel in quarantine because of any quarantinable disease, nor has there been occasion to remove a seaman from one of these oil ships during the fiscal year.

Portland, Me.—Acting Asst. Surg. A. F. Stuart, medical officer in charge. Post-office and telegraphic address, Portland, Me.

Vessels arriving here from foreign ports are chiefly iron steamers with iron-hold floors and 'tween-decks and no wood construction used other than in the crews' quarters and the finishing of superstructures. They all were irregular callers of the moderate-sized cargo type of English, Danish, Swedish, and Norwegian registry, and all were from European ports, being engaged in the North Atlantic trade from English, Scandinavian, and Baltic ports. No vessels from oriental ports arrived during the fiscal year. A large percentage of the vessels brought bulk cargoes of china clay and coal; very few carried general cargo.

Vessels requiring fumigation are fumigated throughout with sulphur. It is evident from the results of periodic six-month fumigations in the vessels arriving here that rat harborage is becoming reduced. Ten years ago 20 to 50 rats were usually recovered following a fumigation, but it is now an exception to find a vessel of the type arriving here with such a number.

During the year 1927 but 23 rats were recovered following the fumigation of 20 vessels, whereas during the fiscal year 1924, following exactly similar fumigations, 319 rats were recovered in 50 vessels.

The following table illustrates the progressive decrease in the number of rats recovered following fumigations at this station for the last four years:

Year	Vessels fumigated	Rats recovered	Average number per vessel
1924	50	319	6.4
1925	23	76	3.3
1926	35	68	1.9
1927	20	23	1.2

During the fiscal year but one vessel arrived with quarantinable disease aboard. The British steamship *Baron Aisle* arrived at this port on March 29, 1927, with a crew of 29 men. One seaman on quarantine inspection was found afflicted with smallpox. This seaman was shipped at Newcastle, England, and developed the disease six days out from England. He was confined to his bunk for only 24 hours and for the following 10 days had mingled with the rest of the crew. Control vaccination of all on board was started within 1 hour after arrival, and the vaccinations were observed each 24 hours. The vessel was held in quarantine for 72 hours. At the end of the third day two additional seamen, who had not shown any immunity reaction at the end of 24 hours to either of two vaccinations, were removed to the detention hospital at House Island, and the vessel was allowed to proceed to her dock with the remainder of her crew, all of whom had shown immunity reaction following the vaccination. On the fourth day after detention, and the seventh day after vaccination, one of the detained seamen developed a modified variola eruption, which passed through the successive stages with papules, vesicles, pustules, and desquamation. The other detainee did not develop smallpox. They were held for a period of 35 days and then released. Their clothing and all sources of contagion were disinfected. The crew were kept under daily observation while in port, but no further case developed, proving the dependability of the vaccination immunity reaction when properly applied, and demonstrating the practicability of avoiding prolonged detention of the vessel and personnel. It was deemed advisable to notify Norfolk, Va., the next port of entry, as to the status of the vessel.

Port Townsend, Wash.—Surg. W. A. Korn, medical officer in charge. (Boarding and inspection station, Port Townsend, Wash.; hospital and disinfecting station, Diamond Point, Wash.)

The Port Townsend Quarantine Station serves all ports on the Puget Sound and its tributaries, the largest port being Seattle. The foreign commerce arriving at this station consists largely of old-established lines of both American and foreign registry, operating modern passenger and cargo vessels, with regular sailings to and from ports in the Philippines, China, and Japan. The arriving cargoes are general merchandise, the most valuable and frequent item being silk. Compared with last year there was a decrease in the number of vessels arriving at this station.

The quarantinable disease most likely to occur on arriving vessels is smallpox, although plague and cholera always threaten. Efforts have been made to impress upon steamship operators the importance of keeping the crews of vessels completely vaccinated. During the past fiscal year no case of smallpox was observed on arriving vessels and no vessel was detained for any of the other quarantinable diseases. On account of the plague situation in the Far East, fumigation of cargo-laden ships from oriental ports is mandatory each trip and is usually performed at the port of destination after discharge of cargo.

Recently it was proposed that the quarantine station at Diamond Point near Port Townsend be abandoned in favor of a relocation nearer Seattle, the principal port of destination. Consideration was given to this proposition and a board consisting of Senior Surgeon Magruder and Surgeons Korn and McKeon investigated the question of relocation of the quarantine station. Their report recommended the continuance of the present quarantine station at Diamond Point.

Providence, R. I.—Surg. H. G. Ebert, medical officer in charge. Post-office and telegraphic address, 403 Federal Building, Providence, R. I.

This year has been uneventful in quarantine work at this station. Fewer vessels have been inspected, though the number of crew and passengers remain about the same.

The types of vessels entering Providence remain the same, namely, passenger vessels of one line, the Fabre Line, from Mediterranean ports, oil tankers mainly from Mexican ports, and a few vessels from Great Britain loaded with coal. No serious condition was found during the year.

The hulk *Newark*, used for detention and disinfection quarters, was removed from this station July 2, 1926, and the station has now only boarding inspection and fumigation facilities.

Sabine, Tex.—Surg. M. F. Haralson, medical officer in charge. Post-office and telegraphic address, Port Arthur, Tex.

This station serves the ports of Sabine, Port Arthur, Port Neches, Beaumont, and Orange, Tex.; also Lake Charles, La. The quarantine boarding inspection is conducted at Sabine, at which point all vessels bound for these ports enter. Limited detention facilities are also maintained at Sabine. The administrative office is located at Port Arthur, Tex., from which point fumigations are supervised at the various ports of destination, following discharge of cargo. The principal vessels from foreign ports arriving at this station comprise oil tankers. During the fiscal year it was not necessary to detain any vessel on account of quarantinable disease.

In May, the United States Shipping Board steamer *Lake Elmdale*, which was loaned to the United States Public Health Service for detention purposes in June, 1923, was returned to the custody of the Shipping Board, and a small isolated building, suitable for quarantine detention purposes, has been leased and equipped. This change effects a considerable saving and will be a more satisfactory arrangement, pending the construction of the urgently needed modern quarantine station.

Special emphasis has been directed to inspection of vessels for rat infestation, and when evidence of rat infestation is found instruction as to rat-proofing corrective measures have been furnished. However, a very large percentage of the vessels inspected are oil tankers, which as usual show very little, if any, degree of rat infestation.

St. Andrews, Fla.—Acting Asst. Surg. W. J. Blackshear, medical officer in charge. Post-office and telegraphic address, Panama City, Fla.

The station does not own any grounds or buildings at this port. All foreign ships entering this port in the past year have been entered in ballast for the purpose of loading export lumber and naval stores. The average risk from a quarantine standpoint on these vessels was not large, and none was detained for quarantinable disease.

San Diego, Calif.—Surg. J. F. Worley, medical officer in charge. Post-office address, Point Loma, Calif. Telegraphic address, San Diego, Calif.

The number of vessels entering quarantine this fiscal year has increased considerably over the two previous years, having been equaled only in 1924. However, the variation in total figures depends principally on the activity of the fishing fleet. There has been an actual increase each year in commercial shipping; and this year, although there has been a continuation of the steady increase in other type of shipping, the greater part of the increase is due to greater activity of the fishing vessels.

The foreign commerce entering this port is of such character as to reduce quarantine risks. By far the greater number of vessels inspected are those of the fishing fleet, which work in Mexican waters along the coast of Lower California. These have little communication with shore except to obtain their clearance papers from one of the small ports, and even at these times they have to anchor offshore, there being no wharves, so that they are not accessible to rats. In addition, this coast is very sparsely settled, and so far as known, is free from quarantinable disease.

The next most numerous class is the intercoastal vessels. While the previous class forms the majority in number of vessels inspected, this class furnishes the major part of persons inspected. These include both passenger liners and freighters. The former are subject to quarantine because they make regular stops at Habana and also take passengers at the canal. They are the only passenger vessels entering quarantine at this port, although many of the foreign-flag freighters carry a few passengers. The intercoastal freighters become subject to quarantine either on account of taking crew or cargo at the canal or touching a Central American or Mexican port.

Next in order, and the only other large vessels, are the freighters from northern European ports, of which there are a considerable number. Most of these touch en route at ports of the West Indies and on the western coast of Central America and Mexico.

In addition there are a number of small cargo boats plying between this port and various near-by Mexican ports; also several Mexican patrol boats that make frequent trips here and a number of yachts which have taken short trips to the Mexican coast.

No vessel has arrived during the year from any of the plague-infected ports, nor from any port where any of the other quarantinable diseases have been reported. During the previous year there were only two vessels from plague-infected ports.

Many naval vessels have been passed, nearly all on certificate of the medical officers, only 12 having required inspection because of lack of such officers. All naval vessels were from West Indian, Central American, and Mexican ports, or had made themselves liable to quarantine at the canal.

The only vessel entering port with quarantinable disease was the American steamship *Finland*, an intercoastal passenger vessel, which had one case of smallpox. After vaccination of 397 possible contacts, and releasing unexposed passengers bound for San Diego, the vessel was allowed to proceed to San Pedro under quarantine for further observation.

San Francisco, Calif.—Surg. J. R. Ridlon in charge. Post-office and telegraphic address, Angel Island, Calif.

The number of vessels arriving at quarantine during the fiscal year was 510, the same as that of last year. They were principally large passenger and cargo vessels belonging to established lines maintaining regular sailings to and from trans-Pacific ports. Only one vessel entered the port which had a quarantinable disease on board during the voyage. The steamship *Finland*, from New York via San Diego and San Pedro, arrived on November 22, 1926, having had a case of smallpox on board in the person of a third-class passenger, which developed en route to San Diego. The quarantine officer at San Diego had vaccinated all crew and third-class passengers. The vessel had been then remanded to San Pedro, where the smallpox case was removed and vaccinations observed. The vessel was then further remanded to San Francisco for further observation of the vaccinations of a limited number of crew and passengers. Upon inspection it was found that 16 members of the crew and 3 third-class passengers had failed to show definite immune reactions and were removed to the quarantine station and held in detention until showing satisfactory immunity. No secondary cases occurred.

Fumigation was carried out on 465 vessels, which is less than the number fumigated for any of the past eight years. This is mostly due to the exemption of tankers from fumigation when showing no rat infestation upon detailed inspection. Of the 465 vessels fumigated, 196 were mandatory fumigations, 170 were periodical, and 99 by request. No rats were found after fumigation on 323 of the 465 vessels fumigated. This number includes 43 vessels fumigated with sulphur which were not searched by our inspectors after fumigation, and a few others which it was not possible to search carefully on account of their being partly loaded.

The fumigation of the remaining 142 vessels yielded 2,440 rats, divided by species as follows: *Mus norvegious*, 6; *Mus alexandrinus*, 1,352; *Mus rattus*, 988; unidentified, 194. There was noted also, after fumigation, 1,115 dead mice. The dead rats were distributed as follows: In holds, 1,307; in storerooms, 351; in galleys, 67; in crews' quarters, 205; in other superstructures, 510; total, 2,440. About 54 per cent of the rats killed were found in the holds, and the balance were distributed in various parts of the vessels other than holds. It was not considered necessary to fumigate engine rooms and shaft alleys except in a few instances. Very few rats were found in passengers' quarters. All rats killed were sent to the laboratory for examination. No plague infection was found. Few rats are found on the regular passenger liners from the Orient, which are fumigated regularly about five times a year, and usually when empty.

The use of liquid hydrocyanic acid-cyanogen chloride mixture is looked upon with favor at this port, where there is little or no danger from containers becoming overheated by excessive summer temperatures. The gas is liberated in a fine spray from cylinders containing the liquid mixture, under about 100 pounds' pressure. This chemical is transported by launch to the ship undergoing fumigation.

Zyklon-B was used on a few vessels toward the end of the year. These two methods will probably displace to a large extent the use of the barrel method in the generation of hydrocyanic acid-cyanogen chloride mixture on account of the extra labor involved in the latter method.

A limited amount of trapping was done on 34 vessels. No record of previous or subsequent fumigation is available for 14 vessels which were trapped, with a total catch of 47 rats. Some were trapped before remanding, and several were trapped subsequent to fumigation at other ports. Traps were placed upon five round-the-world vessels calling here subsequent to fumigation at other ports and 19 rats caught. The following table gives comparative results of trapping operations:

Number of vessels trapped before fumigation	13
Number of rats caught (on 8 vessels)	35
Number of rats killed by subsequent fumigation (on 6 vessels)	331
Number of vessels trapped after fumigation	7
Number of rats caught	0
Number of rats killed by previous fumigations (on 5 vessels)	194

For several months inspections have been made of round-the-world passenger vessels calling at this port, as to evidence of rat infestation and harborage. One of the station inspectors has recently had special training in rat proofing of vessels at New York and since his return has made detailed inspections of seven vessels with specifications for rat proofing. These vessels belong to three lines which have manifested an interest in the rat proofing of their boats.

There are about 30 lines maintaining a more or less frequent regular passenger or freight service from foreign ports to San Francisco. Vessels in the oriental and South American trade regularly call at ports which are known to be infected with certain of the quarantinable diseases.

Those diseases which seem to be of major importance at this port are plague, smallpox, and, to a less extent, cholera. A steady effort is necessary to prevent the importation of plague-infected rats. The crews and steerage passengers on trans-Pacific liners are as a rule well vaccinated at present. The bacteriological examination for cholera at Manila of immigrants destined for the United States serves as an extra safeguard against the importation of that disease.

San Pedro, Calif.—Surg. H. A. Spencer, medical officer in charge. Post-office and telegraphic address, San Pedro, Calif.

This station serves the rapidly developing port of Los Angeles, Calif. At present there are available only quarantine boarding inspection and fumigation facilities, there being no facilities for detention purposes.

During the year a total number of 1,370 vessels passed quarantine, of which 415 were tank ships, 391 were fish boats, and 564 were cargo vessels. The table below shows the world-wide districts from which ships arrive at this port.

West coast of Europe	Mediterranean Straits Settlements	South America	Central America	Mexico	Orient	Round the world
276	39	196	124	554	210	30

One case of smallpox arrived on board an intercoastal ship during the past fiscal year. The vessel first touched at San Diego, where the personnel and passengers were vaccinated, and the vessel was then remanded to San Pedro, where the case was removed, immune vaccination reactions were determined, and revaccinations performed when indicated, during which the vessel was detained one day and was then released under quarantine remand to Angel Island quarantine, San Francisco, Calif., to which port the vessel was bound. Considerable difficulty was encountered in expediting the treatment of the vessel because of the lack of quarantine facilities at the port. No other case of a quarantinable disease was encountered.

Two hundred and twenty vessels were fumigated for the destruction of rats—61 by hydrocyanic acid gas, 95 by cyanogen chloride, 39 by Zyklon–B, and 25 by various combinations of those gases. A total of 730 rats were recovered and were identified as to location and species, as shown in the following table:

Species	Holds	Provision storeroom	Peaks and lazarettes	Living quarters, etc.	Lifeboats	Gallery, pantry, etc.
Mus. alexandrinus	300	22	12	24	3	23
Mus. rattus	196	58	13	32	6	8
Mus. norvegicus	1	1	0	0	0	0
Mus. musculus	3	20	0	8	0	0

The inspection of oil tankers for rat infestation was inaugurated at this station under bureau authority of January, 1925. During that calendar year it was found that the presence of rats on those vessels could be accurately determined. Statistics available at that time indicated that the fumigation of tankers found on inspection to be not rat infested yielded no rats after fumigation. The table appended below includes data collected since the practice of inspection began at this station.

Action taken	Number vessels	Rats found
Inspected and ordered fumigated	56	117
Inspected and released, not fumigated	587	--------
Inspected and released, fumigated by request	48	2
Fumigated, not inspected	147	14

There is need of the establishment of a modern quarantine station at this port, but there are no suitable sites now available. However, the city of Los Angeles has granted to the United States Government an area near the present Deadman's Island which will be reclaimed by filling with dredged material from harbor improvements now in progress. A portion of this area has been allocated for the use of the Public Health Service as a site for a quarantine station.

Savannah, Ga.—Acting Asst. Surg. Barton Brown, medical officer in charge. Post-office and telegraphic address, Savannah, Ga.

During the fiscal year ended June 30, 1927, no quarantinable diseases were encountered and no vessels were detained. The number of vessels inspected shows a decrease of 37 compared to the previous year. The number of vessels fumigated shows a decrease of 50 per cent compared with the previous year. The decrease in the number of vessels inspected and fumigated was mainly in those of American registry. With the exception of tankers, most of the American vessels are Shipping Board vessels, and while most of the cargo is for this port, they now as a rule call at other United States ports before coming here, and therefore the quarantine work is done at the first port of call.

Seattle, Wash.—Surg. L. D. Fricks, medical officer in charge. Post-office and telegraphic address, 3130 Arcade Building, Seattle, Wash.

All vessels entering Puget Sound which are subject to quarantine measures are boarded and inspected at Port Townsend Quarantine Station. About 95 per cent of these vessels have Seattle for their destination; the remainder go to other Sound ports, such as Tacoma, Olympia, Bellingham, and Everett.

The most important quarantine activity at the port of Seattle is that of fumigation. No quarantine inspections are made at Seattle. Inspections are made of fending and rat guarding on all foreign vessels entering this port. During the fiscal year 720 vessels were so inspected. Defective rat guards were repaired and new guards installed when necessary.

Sulphur is being employed for night fumigation and cyanide for vessels fumigated during the daytime. During the year the total of bills rendered for quarantine service at this port amounted to $16,437.36, which was an increase of more than $5,000 over the previous year, and the quarantine service at this station was approximately self-supporting. A total of 3,860 port sanitary statements were issued during the year.

Tampa Bay Quarantine Station, Fla.—Acting Asst. Surg. Percy Ahrons in charge. Post-office, telegraphic, and freight address, Tampa, Fla.

The Tampa Bay Quarantine Station is located on Mullett Key at the entrance to Tampa Bay. It serves the ports of Tampa, Port Tampa, and others located on Tampa Bay and its tributaries. The principal foreign commerce of the port is with West Indian and Mexican ports and the principal cargoes are freight and lumber.

During the fiscal year but one vessel arrived with quarantinable disease on board. This vessel was a coastwise vessel trading between New Orleans and Tampa, which developed a case of smallpox among the crew. Upon arrival at quarantine all the crew were vaccinated and the quarters were fumigated following the removal of the case, and the vessel was allowed to proceed to her dock in Tampa under surveillance. No additional case developed.

The station was in the path of the devastating storm that struck the Florida west coast in September. Fortunately, little damage was sustained at the station. Two schooners were wrecked near the station, and the crew of one managed to get ashore and was temporarily taken care of at the station. The entire crew of the other schooner was lost. One body came ashore on the island and was buried. There was nothing on the body to identify the person. The local authorities were duly notified. Immediately following the storm the station equipment and personnel was placed at the disposal of the local authorities in the near-by communities, and equipment to care for 150 persons was immediately dispatched to Tampa to furnish shelter and help take care of those rendered homeless.

Vineyard Haven, Mass.—Acting Asst. Surg. G. J. Van Beeck, medical officer in charge. Post-office and telegraphic address, Vineyard Haven, Mass.

The quarantine station at this port is under the direction of the medical officer in charge of the United States marine hospital in this port. Five vessels, all of the sailing type, were inspected during the year. No vessel arrived with quarantinable or suspected quarantinable disease aboard. No passengers were aboard the vessels inspected.

TEXAS BORDER STATIONS

Summary of quarantine transactions on the Texas-Mexican border for the fiscal year ended June 30, 1927

	Brownsville	Del Rio	Eagle Pass	El Paso	Hidalgo	Laredo	Presidio	Rio Grande and Roma	Total
Number inspected from interior Mexico	2, 956	1, 799	3, 991	28, 978	3, 202	40, 440	429	1, 458	83, 253
Number of local passengers inspected	863, 607	99, 363	934, 732	2, 301, 245	192, 658	1, 677, 458	12, 546	42, 350	6, 123, 959
Total number of passengers inspected	866, 563	101, 162	938, 723	2, 330, 223	195, 860	1, 717, 898	12, 975	43, 808	6, 207, 212
Total number of persons disinfested	385	860	9, 485	32, 648	1	17, 974	0	374	61, 727
Total number of persons passed without treatment	861, 585	99, 220	929, 238	2, 276, 514	194, 651	1, 671, 039	11, 583	50, 091	6, 093, 921
Total number of persons vaccinated	4, 593	1, 078	3, 543	21, 047	1, 159	46, 859	1, 383	2, 108	81, 770
Total number of sick held for observation	0	4	0	0	0	0	1	0	5
Total number of sick refused admission	0	0	112	14	112	0	8	1	247
Total pieces of baggage disinfected	0	1, 745	11, 206	7, 791	2	25, 735	132	384	46, 995

QUARANTINE OPERATIONS ALONG THE MEXICAN BORDER

Measures in force at the chief points of entry along the Texas-Mexican border have been directed principally against the introduction of typhus and smallpox, although due precautions were exercised against the introduction of other quarantinable diseases. Inspectors are on duty at all hours and aliens who do not present evidence of immunity to smallpox have been vaccinated. The practice of careful continuous vaccination of aliens is believed to be largely responsible for the fact that smallpox has not assumed epidemic proportions along the border. During the past year 81,770 vaccinations were performed. Travelers who were obviously clean and not louse infested were permitted to pass without bathing, but persons who correspond to the steerage class at seaports of entry were bathed and their clothing and baggage disinfected. A great many are sent back to bathe and delouse themselves, and they are gradually learning that they must come and present themselves clean.

The floating native and Mexican population on the United States side of the border present a constant problem to the local health authorities, and the United States Public Health Service officials render them a substantial service by the regular weekly bathing and delousing of prisoners in the city jail and the disinfecting of bedding taken from houses where cases of typhus and smallpox have occurred.

The tendency for clandestine crossing of the river by aliens evading quarantine and immigration inspection, by wading the river or the use of boats, has been greatly lessened. The mounted patrol immigration force which was inaugurated some time ago are patrolling the river night and day to apprehend those who try to enter illegally into the United States.

On May 1 the immigration authorities opened a substation for local crossers at Guadeloupe, 37 miles east of El Paso, and vaccination of aliens seeking entry through that port is being carried out at the same time that they are subjected to medical inspection.

The completion of an international bridge and a hard-surfaced highway, with flood control, at Hidalgo, has greatly increased traffic through that port. The station site has been changed to a point opposite Reynosa, Mexico, and all service activities are at the bridgehead, somewhat less than a mile above the old ferry.

In addition to the above the Public Health Service maintains stations for quarantine and immigration purposes at Columbus, N. Mex.; Douglas, Naco, Nogales, Sasabe,[1] Tucson, and Ajo, Ariz.; and Calexico and Tia Juana, Calif.

Due to the completion of the new Southern Pacific Line into Mexico City, it is anticipated that there will be a great increase in the number of persons crossing at Nogales, Ariz. Having this in mind, the Public Health Service, shortly before the close of the fiscal year, started negotiations to rent a disinfecting plant and install the necessary apparatus. It is understood, however, that through passenger trains will probably not be inaugurated before the last of July or the first of August, and it is believed that by this time the Public Health Service will have everything in readiness to take care of the expected increased number of aliens entering this port.

TRANSACTIONS AT INSULAR QUARANTINE STATIONS

Summary of transactions at insular stations for fiscal year ended June 30, 1927

Station	Vessels inspected	Vessels fumigated		Passengers inspected	Crews inspected	Bills of health issued
		Cyanide	Sulphur			
Hawaii:						
Ahukini	0	0	0	0	0	6
Hilo	25	6	0	1, 904	2, 529	95
Honolulu	597	26	0	87, 867	68, 385	644
Kahului	12	0	0	6	361	72
Koloa	5	0	0	0	190	5
Lahaina	7	0	0	0	246	23
Mahukona	1	0	0	0	21	13
Philippine Islands:						
Cavite	27	0	0	357	4, 033	8
Cebu	69	0	171	98	3, 567	274
Davao	24	0	0	579	1, 957	23
Iloilo	67	0	124	285	3, 338	210

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[1] Formerly known as San Fernando.

Summary of transactions at insular stations for fiscal year ended June 30, 1927—Continued

Station	Vessels inspected	Vessels fumigated		Passengers inspected	Crews inspected	Bill of health issued
		Cyanide	Sulphur			
Philippine Islands—Continued.						
Jolo	47	0	0	571	2,482	54
Legaspi	4	0	0	8	252	23
Manila	912	73	197	55,068	90,193	876
Olongapo	2	0	0	0	199	2
Zamboanga	37	0	2	637	2,537	108
Porto Rico:						
Aguadilla	5	0	0	6	128	41
Arecibo	1	0	0	0	34	21
Arroyo	6	0	0	1	129	34
Central Aguirre	0	0	0	0	0	13
Fajardo	38	0	0	0	179	297
Guanica	146	0	3	732	8,575	35
Humacao	14	0	0	0	232	39
Mayaguez	34	0	0	65	543	51
Ponce	117	0	3	2,248	4,659	93
San Juan	461	24	26	14,976	20,919	808
Virgin Islands:						
Christiansted	40	0	0	63	211	0
Fredericksted	55	0	0	1,553	2,397	0
St. Thomas	238	0	37	2,437	8,077	456
Total	2,991	129	563	169,461	226,373	4,324

Reports from Insular Quarantine Stations

OPERATIONS OF THE SERVICE IN HAWAII

Surg. Hugh de Valin, chief quarantine officer. Post-office and telegraphic address, Honolulu, Hawaii.

This quarantine station, being located at the crossroads of the Northern Pacific Ocean, stands as the first line of defense against the introduction of quarantinable disease from the Orient into the United States. From a quarantine standpoint it is geographically in a strategic position to so function. In addition it serves similarly to any other quarantine station to prevent the introduction of quarantinable disease into the Hawaiian Islands. Large, swift passenger and freight-carrying vessels enter and clear this port from oriental ports, where plague, cholera and smallpox are prevalent, bound for ports in the United States. The detection of the existence of quarantinable diseases on such vessels at this point prior to their arrival at the United States is of great value in the prevention of the introduction of such diseases into the United States.

The measures in force to prevent the introduction of plague include the quarantine inspection of all vessels upon arrival from oriental ports to ascertain that there have been no suspicious cases of illness enroute among passengers or crew, and further than an epizootic was not in evidence among the rats on board. All vessels determined to be in a satisfactory condition in these respects are then provisionally allowed to proceed. As practically all such vessels passing through here stop but a few hours en route to the mainland from oriental ports, necessary plague-preventive fumigations are performed at terminal ports in the United States, in order to not subject the vessel to unnecessary delay and in order to perform an efficient fumigation, only possible when the vessel is discharged of cargo.

However, during the fiscal year, special cholera regulations were found unnecessary for vessels arriving from the Orient, but inasmuch as this port has direct contact with the Orient, it is always necessary to give attention to the cholera situation at oriental ports, and in cases of cholera epidemics, to invoke special cholera regulations governing both crews and passengers on arriving vessels, including a special outgoing quarantine inspection at the oriental port of departure, as an additional safeguard against the possible introduction of the disease not only to the Hawaiian Islands, but to the mainland as well.

All crews and passengers on vessels from the Orient were inspected upon arrival at quarantine. Those destined for this port were examined for satisfactory evidence of smallpox immunization and were vaccinated when necessary.

The continued low incidence of smallpox on the Pacific coast during the fiscal year did not require the application of special regulations as had been the case the year before. The situation remaining favorable, it was deemed safe to limit quarantine procedure, for vessels from the mainland to boarding only. No inspection of crews or passengers was made, provided the ship's doctor reported health conditions satisfactory on board, and submitted a certificate to the effect that members of crews and steerage passengers debarking at this port, had been examined by them and showed satisfactory evidence of smallpox immunization. The personnel of all vessels not carrying medical officers was inspected by service-boarding officers and vaccinations were performed when considered necessary.

The routine enforcement of reasonable vaccination regulations is considered as having an important bearing on the fact that no smallpox has developed in the Hawaiian Islands in recent years.

During the fiscal year, but one vessel entering this port had quarantinable disease aboard. The United States Army transport *Thomas*, arriving at Honolulu April 7, 1927, from San Francisco, reported one case of smallpox in the enlisted personnel. This case had been isolated in the ship's hospital. Upon arrival at this port the patient was removed to the quarantine station and held until the subsidence of the disease. Probable contacts on board had been vaccinated en route by the transport medical officer. Thirteen enlisted personnel, to be debarked at this port, were taken to quarantine and vaccinated. They were discharged from quarantine upon satisfactory evidence of smallpox immunization. As it was considered advisable to limit contact of personnel with the city, only first-class passengers were allowed ashore during the 24 hours the vessel remained in port.

OPERATIONS OF THE SERVICE IN THE PHILIPPINE ISLANDS

Surg. C. R. Eskey, chief quarantine officer. Post-office address, P. O. box 424, Manila, P. I.; office, customhouse, Manila; telegraphic address, quarantine, Manila.

Medical officers conduct quarantine inspections at the nine Philippine ports. Full-time officers are on duty at Manila, Cebu, and Iloilo. Part-time local physicians are on duty at Zamboanga, Jolo, Davao, and Legaspi. At Cavite and Olongapo, medical officers of the United

States Navy act as quarantine officers, being detailed for this duty by the admiral in command of the Asiatic Naval Station. The personnel of the quarantine service in the Philippines is as follows: 4 commissioned officers, 8 acting assistant surgeons, 1 pharmacist, and 75 employees.

Two quarantine stations, equipped for detention and disinfection, are maintained, one at Mariveles and the other at Cebu. The Mariveles station is located about 30 miles from Manila and serves the northern part of the archipelago. The Cebu station is on the island of Kawit, 2 miles from the city of Cebu, and serves the southern islands.

PREVALENCE OF QUARANTINABLE DISEASES IN THE ORIENT

In order that a proper conception may be obtained regarding the scope of quarantine activities in the Philippines, it is necessary that some report be made to show the prevalence of plague, cholera, and smallpox at the different ports in close commercial relationship. With this end in view, a tabulation has been made showing the number of cases of these diseases as reported weekly by the Eastern Bureau, Health Section, League of Nations, Singapore, for 15 ports in Asia. Many other ports were reported infected but are not included here because direct intercourse between them and the Philippines is infrequent. It should be stated that epidemiological reports in the Orient are only relative and by no means indicate the actual number of cases of quarantinable diseases occurring at most ports. There are also a number of ports from which no epidemiological information can be obtained that are frequently visited by vessels en route to the Philippines. However, the table accompanying this report gives a good idea of the quarantine risk at Philippine ports.

The table has been compiled so that the different ports are in the order of their importance to the quarantine officer, in accordance with the number of vessels and number of passengers for the Philippines from each port. For instance, Amoy is considered the most important port because 16,884 passengers from Amoy were inspected at quarantine this year, or over 25 per cent of the total number of passengers inspected. More individuals embark for the Philippines at Amoy than all of the other ports in Asia combined. Hong Kong is given second place, because more vessels come direct from there than any other port, and it ranks next to Amoy in the number of passengers embarking for the Philippines.

In the second column of the table is given the number of days required for the voyage from each port to the Philippine Islands. This has been computed on the basis of the time usually taken for the trip, whether the vessel comes direct or by way of other ports. Knowledge of the length of the journey from an infected port is necessary to understand the quarantine hazard involved.

In general, it may be said that cholera was very prevalent this year with infection of nearly every important port on the mainland of Asia, from Karachi, India, to Vladivostok, with the exception of Hong Kong. Plague was reported at many ports and was no doubt present at many other places. Smallpox was remarkable because of the small number of cases reported at most ports. Hong Kong was infected with smallpox from January to the end of the year.

Quarantinable diseases as reported weekly by the eastern bureau, Singapore, from July 1, 1926, to June 24, 1927

Ports	Distance in days from Philippine Island ports	Plague		Cholera		Smallpox	
		Cases	Deaths	Cases	Deaths	Cases	Deaths
Amoy, China	2½ to 4 days		42		274		2
Hong Kong, China	1½ to 3 days					114	88
Shanghai, China	4 to 7 days			1,448	500	2	11
Singapore, Straits Settlements	4 to 6 days	2	2	23	15	39	11
Yokohama, Japan	5 to 12 days	6	6	1			
Saigon, French Indo-China	6 to 8 days	3	3	280	205	8	
Surabaya, Java	5 to 7 days	29	30			8	2
Colombo, Ceylon	10 to 15 days	73	58			10	
Dairen, Manchuria	6 to 14 days			6	2	24	5
Vladivostok	7 to 14 days					120	
Osaka, Japan	5 to 7 days			1		5	
Bangkok, Siam	5 to 8 days	8	4	353	157	227	133
Port Arthur	7 to 14 days			2	1	3	1
Calcutta, India	12 to 18 days		1		1,916	4,247	3,088
Haiphong, French Indo-China	6 to 8 days			1,208	1,412		

INCOMING QUARANTINE

General survey.—The commercial relations of the Philippines with the outside world are gradually increasing in importance each year, and therefore the activities of the quarantine officers are augmented accordingly, particularly at Manila. The following table gives a comparative idea of the work at Manila for the past 10 years:

	1918	1920	1922	1924	1926	1927
Vessels inspected	543	781	775	841	854	912
Persons inspected	88,734	135,250	129,043	115,332	133,969	145,260
Vessels fumigated	177	176	181	150	224	257

During the past year no case of quarantinable disease was reported to have passed quarantine inspection at any port in the Philippine Islands. Only three cases of such diseases have occurred on foreign vessels; two cases of leprosy were discovered during inspection at Manila and one case of suspected smallpox at Iloilo. The leprosy cases were removed and sent to San Lazaro Hospital, Manila, for isolation and treatment and the quarters occupied by them thoroughly disinfected. The vessel with smallpox on board was remanded to the quarantine station at Cebu for removal of the sick, vaccination of contacts, and disinfection.

Cholera.—As soon as it was apparent that Shanghai and Amoy were seriously infected with cholera, special quarantine measures were taken to prevent infection reaching the Philippines. From July 23, 1926, to November 22, 1926, all steerage passengers embarking at Shanghai were required to furnish stool specimens for bacteriological examination upon arrival at Manila. (As all steerage passengers from the ports of Amoy and Shanghai pass through Manila no special measures were necessary at other ports.)

From August 9, 1926, until September 25, 1926, or during the height of the epidemic, first and second class passengers from Shanghai were also required to submit stool specimens. Vessels from Shanghai were not detained, but the suspected steerage passengers were held on board until the result of the bacteriological examinations was reported. First and second class passengers were allowed to go ashore after giving their addresses.

From August 9, 1926, until November 27, 1926, similar quarantine measures were enforced against passengers from Amoy. As the voyage from Amoy is short, about three days, vessels and passengers were detained in quarantine until the result of the examination for cholera carriers was known. The laboratory reported seven individuals from Amoy as carriers and they were detained at San Lazaro Hospital until free from vibrios. No carriers were discovered among the passengers from Shanghai. The total number of stools examined during the quarantine against Amoy and Shanghai was 4,995.

During the latter half of the quarantine period all passengers held for stool examinations and the members of the crews on vessels running between Amoy and Manila were inoculated with cholera vaccine. Inoculations were given to assist the Philippine Health Service in its campaign to immunize the public more than for the purpose of preventing cases of cholera passing quarantine. The total number of inoculations administered was 2,453.

Plague.—The quarantine against plague at Amoy instituted May 24, 1926, was continued until September 29, 1926, or until Amoy was reported free from human plague. Passenger vessels were held in quarantine until seven days had elapsed since departing from Amoy. While the vessel was in quarantine a daily inspection was made for sickness, and before release the cargo and personal baggage was fumigated to destroy rats and fleas. From July 1, 1926, until September 29, 1926, six vessels were detained at quarantine for an average of four days each, and a total of 382 crew and 2,509 passengers were held on board these vessels.

The trade routes of vessels inspected at Philippine ports is such that over 90 per cent of them have to be treated in accordance with paragraphs 101 and 102 of the United States quarantine regulations, due to the fact that they are from plague-infected or suspected ports, as outlined in Foreign Quarantine Circular No. 1, issued March 18, 1925. Funds and personnel for fumigation of vessels are limited; therefore, treatment of vessels from plague ports is limited to those which are believed actually exposed to infestation with fleas or rats while in port, or on which inspection reveals evidence of rat harborage. Inspection for signs of rats is now being carried out on vessels from infected ports and fumigation instituted in every case, if positive evidence is found. Instead of treating every compartment of a vessel, as in the past, when fumigation is instituted, the present policy is to exempt such spaces as are obviously free from rats.

Treatment of coal-laden vessels has been altered somewhat during the past year because it has been discovered that in the fumigation of vessels of this type, 80 per cent of the dead rats are found in other compartments than the holds. When the boarding officer decides that fumigation is necessary of a vessel with a cargo of coal, treatment of all probably infested compartments is instituted at once instead of waiting until after discharge, and if more than five rats are killed, the vessel is fumigated again when unloaded. This measure is adopted in certain cases at Manila and on all coal vessels at Cebu. It is believed that the danger of plague-infected rats leaving these vessels at Cebu will be reduced considerably because all vessels must go alongside the wharf to discharge there and unloading is slow, requiring 10 to 14 days, or more. Furthermore, the port gets protection from fumigation when the vessels are handled as outlined above, which is not the case when waiting until the cargo of coal is unloaded. Most of the vessels of this character are tramp steamers and will not return to the Philippines again for several months or more, or may never return.

During the year 129 vessels in foreign trade were fumigated at Philippine ports for the destruction of rats, as follows: Manila, 95; Cebu, 14; Mariveles, 13; Iloilo, 5; and Zamboanga, 2. Sulphur is the only fumigant available except at Manila where cyanogen chloride and hydrogen cyanide are used in the fumigation of vessels before discharge of cargo and vessels with fittings that would be seriously injured by sulphur. This form of fumigation was used in the treatment of 38 cargo vessels and 34 noncargo vessels, principally United States naval vessels. Four hundred and forty dead rats were found after fumigation of cargo vessels in foreign trade. The smallest percentage of rats was found after fumigation of 36 vessels with cargo, no rats were discovered on 26, and 53 rats were killed on 10 of them. All rats recovered at Manila were sent to the bureau of science laboratory for examination, but no plague-infected rat was found.

Smallpox.—Although smallpox was less of a menace this year than usual, every necessary precaution was taken to prevent outside infection entering the Philippines. The procedure instituted last year, requiring a smallpox immunity reaction before steerage passengers are allowed to embark at Amoy, Hong Kong, and Shanghai for the Philippines, was enforced the entire year. This measure is of inestimable value to the quarantine officers at Philippine ports. Not a single case of smallpox has passed quarantine inspection during the incubation period since it was instituted. All other steerage passengers are required to show evidence of recent vaccination or submit to vaccination at quarantine. As the detention of vessels at quarantine is shortened when vaccination has been previously performed, the ship's surgeon usually inspects and vaccinates the steerage passengers before the vessel arrives in the Philippines, thus reducing the possibility of these individuals passing during the incubation of smallpox. It was only necessary for quarantine officers to vaccinate 350 incoming passengers this year.

The campaign started last year to keep the seamen, employed on vessels in trade with the Orient and the United States which call at Philippine ports, immunized against smallpox has been continued. Including seamen on vessels from smallpox-infected ports, 7,500 members of the crews on vessels entering Philippine ports were vaccinated this year. Ship's surgeons have been required to keep the crews of their vessels vaccinated so that approximately 5,000 to 6,000 other seamen are kept immunized in this manner.

Minor communicable diseases.—Very few cases of the minor infectious diseases have occurred on vessels arriving at Philippine ports during this year. The U. S. naval transport *Chaumont* arrived at Manila from San Francisco via Honolulu December 13, 1926, with 14 cases of measles. Only five other vessels, infected with three cases of varicella and two cases of measles, entered Manila. After removal of the sick, appropriate disinfection was carried out in each case.

OUTGOING QUARANTINE

A considerable amount of the quarantine work in the Philippines comes under the heading of outgoing quarantine and corresponds more or less with the duties of medical officers of the Public Health Service attached to United States consulates.

Bills of health.—United States consular bills of health were issued by quarantine officers to all vessels clearing from ports of entry in the Philippines for a port in the United States or its possessions or other dependencies. The total number of United States bills of health issued was 844, divided as follows: Manila, 409; Cebu, 153; Iloilo, 167; Zamboanga, 45; Davao, 52; Jolo, 3; Legaspi, 13; and Cavite, 2.

Outgoing inspection.—All vessels clearing from a port of entry in the Philippines direct to a port in the United States or its dependencies is required to submit to an outgoing inspection similar to that made at time of entry before the United States consular bill of health is issued. The total outgoing inspections were as follows: 83 vessels, 4,788 crew, and 60 passengers.

Cholera.—In carrying out the examination of steerage passengers leaving the Philippines for United States ports last year it was discovered that nearly one-half of 1 per cent of the general population were carriers of a nonagglutinating choleralike vibrio.

As individuals harboring this organism are considered as positive cholera carriers, it was believed advisable to continue the bacteriological examination of stool specimens from all steerage passengers bound to the United States, regardless of the abatement of cholera in these islands. This year 10,967 stool specimens were collected at the quarantine office in Manila and examined at the bureau of science laboratory, with a finding of 29 carriers. Another agency, the Hawaiian Sugar Planters' Association, also carries out this examination for contract laborers and their examinations are accepted by the quarantine service. They examined the stools of 4,216 laborers and reported 35 positive for carriers.

In order to enforce this regulation it was necessary to make an outgoing inspection of all steerage passengers embarking on vessels bound for the United States, thus necessitating the examination of 10,172 steerage passengers not included in the report of outgoing inspections mentioned above. It will be noted that a total of 15,183 cholera examinations were made at Manila, or 5,011 more than the outgoing steerage examined. This difference is due to the examinations made for steamship companies whose vessels do not clear for the United States.

Smallpox.—All steerage passengers bound for United States ports are vaccinated against smallpox before they purchase their steamship tickets. During the year 10,967 such passengers were vaccinated by the quarantine service and 4,216 by the Hawaiian Sugar Planters' Association physician, or a total of 15,183. A check of these vaccinations is made during the outgoing inspection for enforcing the cholora examination requirements.

Although mentioned under the subject of incoming quarantine, the vaccination of a large per cent of the 7,500 seamen on vessels en route to the United States was performed for the direct benefit of ports there and only indirectly for the protection of the Philippines. The crews of many vessels that were in no way exposed to smallpox before arrival here were vaccinated at quarantine.

QUARANTINABLE DISEASES IN THE PHILLIPINE ISLANDS

Health conditions in the Philippine Islands have been exceptionally good during the past year, as indicated by the incidence of the three quarantinable diseases—plague, cholera, and smallpox. The cholera outbreak, which began during the summer of 1925, subsided in October, 1926. During the months of July, August, September, and October only 25 cases of cholera were reported in the Philippines. Most of these cases occurred in Manila and surrounding territory. Cholera was not present at any of the other ports of entry. During the months of May and June, six suspected or unconfirmed cases have been reported from the islands of Masbate and Leyte, which have no ports at which vessels in foreign trade may call.

Plague has not been found in these islands since 1914. The Philippine Health Service still conducts rat trapping at Manila, and during the 11 months from July, 1926, to the end of May, 1927, caught 52,363 rats. All rodents trapped were examined for plague, but no infected rats were discovered. In addition, 874 rats killed during the fumigation of vessels in interisland trade at Manila were examined for plague infection with negative results. These rats furnish an index of the presence of rat plague for the entire archipelago, as the group of vessels upon which they were found visit practically every port.

The only report of smallpox during the year was one suspected case at Cebu in December. The diagnosis of this case was doubtful. The Philippine Health Service continuously conducts its campaign requiring smallpox vaccination with very good results.

INTERISLAND QUARANTINE

Health conditions at Philippine ports with respect to the prevalence of quarantinable diseases was such that it was not necessary to require vessels in coastwise or interisland commerce to undergo quarantine inspection at ports of entry this year. The regulation requiring the vaccination of the crews on interisland vessels once each year and all new members signed on resulted in the vaccination of 5,230 such seamen.

Interisland vessels were fumigated every six months for the destruction of rats and other vermin. At the time of fumigation all vessels were given a thorough mechanical cleaning. It will be noted that a high percentage of rats were killed in the fumigation of these vessels, which is probably due to the fact that most of the vessels are small and offer easy access to rats when alongside of piers, and because they visit many small ports at which rat-guarding regulations are not enforced. During the year, 403 interisland vessels were fumigated at Philippine ports, with the recovery of 2,153 dead rats.

EASTERN BUREAU, SINGAPORE

It is appropriate to mention in this report the value of the epidemiological news service, compiled by the eastern bureau, health section, League of Nations, to the quarantine officers at Philippine ports. The eastern bureau broadcasts in code through the radio station at Saigon each Friday evening a report of the quarantinable diseases—cholera, plague, and smallpox—occurring at approximately 135 ports in telegraphic liaison with the bureau for the week ended the previous Saturday. As nearly every important port in Asia reports to the eastern bureau, quarantine officers are able to keep thoroughly informed regarding the occurrence of the reportable diseases in this area at all times. Through the courtesy of the commandant of the naval radio station at Los Baños the quarantine service in the Philippines has been able to receive a copy of the weekly broadcast. The eastern bureau also prints a bulletin each week giving a more comprehensive report than that contained in the radiogram.

It has been found that the eastern bureau reports are of service in supplementing the usual bills of health carried by vessels and in the case of vessels arriving with alcoholic cargo, that were until recently refused bills of health by United States consular agents. Probably the greatest practical value is rendered in the case of vessels arriving in the Philippines either direct or by way of an intermediate port where there is no United States consul and a bill of health can not be obtained. During this year 360, or over one-third, of the vessels inspected at quarantine at Manila had recently called at one or more ports in the Orient from which no American bill of health could be obtained. As the reports of the eastern bureau cover nearly all of these ports, the boarding officer was aware of the health conditions at such ports when making the quarantine inspection of vessels without proper bills of health.

VESSELS WITHOUT BILLS OF HEALTH

During the year 39 vessels from 209 ports were inspected at Manila which arrived without bills of health due to the decision of the Attorney General, recently revoked, that United States consuls can not issue bills of health to vessels carrying alcoholic beverages in their cargo for the Philippines. This decision was only detrimental to the work of the quarantine officers, as the lack of a bill of health simply subjects the vessel to a nominal fine of $10 for each port at which the proper papers were not obtained. This did not serve to prevent vessels from accepting alcoholic beverages in their cargoes and did tend to make the protection of the health of the islands more difficult from a quarantine standpoint.

BUILDINGS AND EQUIPMENT

Quarantine station, Cebu.—The buildings and grounds of the quarantine station at Cebu are in fair condition and the station is able to house for detention purposes as many individuals as will be probably demanded of it. The wharf is in need of repairs.

Quarantine station, Mariveles.—The buildings and grounds at this station, located 30 miles from Manila, are in fairly good condition. The cabin passenger barracks was torn down in 1925 and has not been replaced. Furthermore, there is no building suitable for use as a hospital on the station. The lack of proper facilities to detain cabin passengers and to treat the sick is liable to prove very embarrassing when it is necessary to detain any of the large passenger ships calling at Manila. An appropriation of $20,000 has been requested through the bureau of public works from the Philippine Legislature for the ensuing year. It is contemplated to erect one building which will serve the double purpose of being used as a cabin passenger barracks and a hospital.

Quarantine launches.—The quarantine service in the Philippines owns six launches, as follows: Three steam launches, the *Burma* at Manila, the *Zapote* at Iloilo, and the *Sanidad* at Cebu; two gasoline launches, the *Salud* and *Mercury*, both at present at Mariveles and neither serviceable; and one crude-oil launch, the *Viola*, at Manila.

The *Sanidad* had a new boiler installed in April and is in fair condition now, although it is believed that a new propeller shaft and propeller will soon be required to place it in first-class condition.

The *Burma*, which was purchased about one year ago, is in need of considerable alterations to her deck structure before she will be entirely suitable for the work demanded of a quarantine boarding launch. These repairs will be made as money becomes available.

The *Viola* has never operated satisfactorily since it was turned over to the quarantine service by the bureau of commerce and industry. The gasoline-kerosene engine with which the *Viola* was equipped has cost several thousand dollars in repairs and would seldom operate when needed. Therefore, it was decided to purchase a new engine for this launch. At the present time the *Viola* is having installed a 40-horsepower, 2-cycle, full Diesel-type engine which will operate the vessel much more economically than the old-type engine.

As stated above, neither the *Salud* nor the *Mercury* are in a serviceable condition at present. The engine of the *Salud* was removed and is awaiting condemnation. The gasoline engine of the *Mercury* is being repaired at Mariveles and, possibly, it will be installed in the *Salud*, as it was unsatisfactory for the *Mercury*. The *Mercury* is in need of considerable repairs to the hull which will be made at Mariveles and when funds are available a new engine may be purchased so that the launch will be serviceable and then held in reserve or sent to one of the other stations.

Report by months of incoming quarantine inspections at Manila for the fiscal year ending June 30, 1927

Month	Total vessels inspected	Passed free pratique	Passed provisional pratique	Vessels detained	Days detained	Seamen inspected	Passengers inspected	Seamen detained				Passengers detained				
								Plague	Cholera	Smallpox	Leprosy	Plague	Cholera	Smallpox	Leprosy	Sick
July	68	----	66	2	8	6,425	4,710	152	------	----	----	1,542	------	----	----	----
August	75	1	71	3	12	7,476	3,143	153	122	----	----	711	305	----	1	1
September	62	3	56	3	8	5,695	3,223	77	124	----	----	256	629	----	----	----
October	88	17	66	5	10	9,050	5,681	----	410	3	----	-------	2,363	----	----	----
November	87	16	67	4	4	8,948	5,495	----	292	----	----	-------	1,529	----	----	----
December	72	2	70	----	----	8,033	6,012	----	------	----	----	-------	-------	----	----	----
January	82	3	79	----	----	8,499	2,698	----	------	----	----	-------	-------	----	----	----
February	74	1	73	----	----	6,431	3,435	----	------	----	----	-------	-------	----	----	----
March	80	5	74	----	----	7,746	4,967	----	63	----	----	-------	-------	----	----	----
April	79	2	77	----	----	7,934	6,102	----	------	----	----	-------	-------	----	1	1
May	75	----	75	----	----	7,255	5,420	----	------	----	----	-------	-------	----	----	----
June	70	----	70	----	----	6,701	4,182	----	------	----	----	-------	-------	----	----	----
Total	912	50	844	17	42	90,193	55,068	382	1,011	3	----	2,509	4,826	----	2	2

Monthly report of laboratory examinations and vaccinations at Manila, P. I., for the fiscal year ending June 30, 1927

Month	Cholera							Smallpox					Leprosy		Plague	
	Incoming examination for carriers	Detained as carriers	Outgoing examination for carriers	Detained as carriers	Total examinations for carriers	Total detained	Incoming persons inoculated	Incoming vaccinations		Outgoing passengers vaccinated	Interisland crews vaccinated	Total vaccinated	Bacteriological examination	Positive	Rats examined	Rats positive
								Passengers	Crew							
July	0	0	661	1	661	1	------	12	2,172	661	1	2,846	----	----	103	0
August	427	----	516	7	943	7	------	----	484	516	------	1,000	1	1	117	0
September	676	7	603	1	1,279	8	661	1	391	603	165	1,160	----	----	118	0
October	2,363	----	375	----	2,738	----	2,363	13	392	375	1,503	2,283	----	----	117	0
November	1,529	----	181	----	1,710	----	1,529	1	466	181	245	893	----	----	87	0
December	------	----	218	-- -	218	----	------	----	227	218	19	464	----	----	108	0
January	------	----	789	----	789	----	------	----	438	789	34	1,261	----	----	118	0
February	------	----	956	----	956	----	------	5	282	956	8	1,251	----	----	22	0
March	63	----	1,292	----	1,355	----	------	----	421	1,292	------	1,713	----	----	11	0
April	------	----	2,077	7	2,077	7	------	8	373	2,052	16	2,449	1	1	43	0
May	------	----	1,637	10	1,637	10	------	243	715	1,637	798	3,393	----	----	340	0
June	------	----	1,679	3	1,679	3	------	67	541	1,679	912	3,199	----	----	186	0
Total	5,058	7	10,984	29	16,042	36	4,553	350	6,902	10,959	3,701	21,912	2	2	1,370	0

Tabulation of fumigations at Manila for the fiscal year ending June 30, 1927

	Number of vessels			Number of rats found in different compartments									Fumigant		
	Total	No rats recovered	Rats recovered	Total rats killed	Holds	Provision storeroom	Forepeak, forecastle, and crew's quarters	Officers' and passenger quarters	Pantries	Dining rooms	Lifeboats	Miscellaneous	Sulphur	Cyanogen chloride and cyanide	SO_2, and HCN and CNCl
Cargo vessels in foreign trade:															
Nonrat-food cargo, chiefly coal vessels—															
Fumigated after discharge	26	8	18	159	32	114	6	----	4	2	1	----	26	----	----
Fumigated before discharge; holds not treated	15	8	7	38	----	22	14	----	2	----	----	----	15	----	----
Total	41	16	25	197	32	136	20	----	6	2	1	----	41	----	----
General cargo carriers—															
Fumigated after discharge	18	10	8	190	146	21	13	10	----	----	----	----	16	----	2
Fumigated before discharge	36	26	10	53	15	20	11	3	2	----	2	----	----	24	12
Total	54	36	18	243	161	41	24	13	2	----	2	----	16	24	14
Total foreign vessels	95	52	43	440	193	177	44	13	8	2	3	----	57	24	14
Interisland freight vessels:															
Vessels over 500 net tons	42	8	34	450	335	56	53	2	----	4	----	----	42	----	----
Under 500 net tons	84	44	40	424	342	28	48	----	3	3	----	----	83	----	1
Total interisland vessels	126	52	74	874	677	84	101	2	3	7	----	----	125	----	1
Noncargo vessels, chiefly naval:															
Destroyers	13	4	9	46	----	----	24	20	2	7	----	----	----	13	----
Submarines	12	11	1	1	----	----	----	----	----	----	----	1	----	12	----
Miscellaneous	11	8	3	12	----	3	----	2	3	----	----	4	2	7	2
Total noncargo vessels	36	23	13	59	----	3	24	22	5	7	----	5	2	32	2
Grand total	257	127	130	1,373	870	264	169	37	16	9	3	5	184	56	17

OPERATIONS OF THE SERVICE IN PORTO RICO

Surg. O. H. Cox, chief quarantine officer. Post-office and telegraphic address, San Juan, P. R.

San Juan is the principal port in the island of Porto Rico, and here are located the headquarters of the quarantine service for the island. Boarding, fumigation, and detention facilities are maintained at the Miraflores Quarantine Station in San Juan Harbor. There is also considerable shipping activity in the port of Ponce, at which quarantine, boarding inspection, and fumigation facilities are maintained. In addition there are maintained quarantine boarding inspection facilities at the subports of Aguadilla, Arecibo, Arroyo, Central Aguierre, Fajardo, Guanica, Humacao, and Mayaguez, all of which are under the general supervision of the headquarters in San Juan.

Foreign commerce entering the ports of this island is diversified. Commerce with United States ports, especially New York, is very active, regular service being maintained by three steamship lines to the port of New York. Many of these vessels also call en route at ports in Cuba, Haiti, Dominican Republic, and Venezuela. Cargoes of the latter are general and their passengers are miscellaneous. During crop seasons fruit and sugar vessels increase the number of vessels. Quite frequently vessels enter San Juan from European ports with bulk cargoes of cement, etc. In addition the Spanish Trans-Atlantic Line has passenger ships in port bimonthly. These vessels usually call at the Canary Islands. The principal quarantine risks here are plague and smallpox.

Due to the proximity of Porto Rican ports to many other small ports in adjacent islands of various nationality, all maintaining sanitary organizations ranging from well-directed services to practically none, island vessels are closely watched, especially for smallpox, while vessels from the Canary Islands are carefully handled to prevent the possible introduction of plague. The latter vessels anchor in the harbor and the cargoes are lightered. The cargoes are usually vegetables in crates, and these are subject to fumigation in covered lighters before they are permitted to come to the docks. The few wharves in San Juan and Ponce are well constructed. At all other ports in Porto Rico the vessels anchor in the harbor.

Beginning in February, 1927, there was experimentally inaugurated a modification of quarantine requirements of certain vessels exclusively engaged in trade between New York and Porto Rico. These vessels were required, as a condition for such special consideration, to eliminate rat harborages in their structures, thus automatically reducing the likelihood of their conveying plague. These vessels are subject to quarantine inspection prior to departure from San Juan, and, if satisfactory, such vessels are permitted to enter the port of New York without undergoing quarantine inspection upon arrival, provided no sickness accompanied by fever or skin eruption has occurred en route.

No special events of quarantine import occurred during the present fiscal year, with the exception of an increase in the number of vessels entering this port. During the fiscal year no quarantinable diseases have been detected and no detentions therefor have been necessary.

The majority of the fumigations are effected with the cyanide method. Sulphur is occasionally used in sailing vessels where time permits and their fittings are not subject to damage from sulphur fumes. There is a large supply of sulphur on hand, which it is desired to use up, in order to avoid deterioration and to permit other use of storage space.

During the last half of the preceding fiscal year arrangements were perfected for the conduct of a rat-flea survey in the port of San Juan, in conjunction with the bureau of plague prevention of the insular health department. Plans were made for the trapping of live rats in cage traps from which the fleas were combed and identified. This work was experimentally inaugurated in February, 1926, and by the beginning of the present fiscal year had become pretty well stabilized. It has been continued throughout the present fiscal year, and the results are best shown in the following tables:

Summary of a rat-flea survey from July 1, 1926, to June 30, 1927, at San Juan, P. R.

	July	August	September	October	November	December	January	February	March	April	May	June	Total
Average number of traps set daily	30 3	31.3	40.9	60.6	47.77	152.76	247.26	261	256.63	258	244.11	236.35	155.58
Rats recovered:													
M. norvegicus—													
Male	0	2	2	8	4	12	14	28	28	27	15	17	157
Female	0	6	9	5	9	15	13	15	13	15	12	16	128
M. alexandrinus—													
Male	1	5	2	0	0	2	2	1	1	0	0	3	17
Female	0	1	2	1	2	0	1	0	2	2	2	3	16
M. rattus—													
Male	2	4	2	1	0	2	3	5	1	2	0	0	22
Female	1	2	5	2	1	4	1	2	1	1	0	0	20
Total	4	20	22	17	16	35	34	51	46	47	29	39	360
Fleas recovered:													
X. cheopis—													
Male	12	51	102	77	79	123	135	133	95	123	284	258	1,472
Female	16	29	82	36	66	93	125	112	95	116	134	163	1,067
C. canis and felis—													
Male	0	0	0	0	0	0	0	0	0	0	0	0	0
Female	0	0	0	0	1	0	0	0	0	0	0	0	1
E. gallinacea—													
Male	0	0	0	1	0	0	0	0	1	2	0	0	4
Female	0	0	3	0	1	2	5	5	5	10	0	0	31
Total	28	80	187	114	147	218	265	250	196	251	418	421	2,575
Mean temperature	80.4	80.7	80.8	79.9	78.55	76	75.3	74	74.95	76.2	78.5	79.2	77.795
Mean humidity	76.8	77.7	77.06	77	79.25	76.6	80.9	79	79.55	79.6	85.5	85.95	79.576
Precipitation	5.49	10.37	5.19	8.32	3.11	2.21	3.70	1.6	9.38	5.52	10.36	8.67	6.16
Mean barometer	30	30	29.91	29.92	29.94	30.001	30.06	30.01	30.05	29.99	30.02	30.03	29.994

Summary by months of San Juan rat-flea survey

[X. c.=*Xenopsylla cheopis;* Ct. c.=*Ctenocephalus canis and felis;* E. g.=*Echidnophaga gallinacea*]

	Number of rats	Total fleas	Species of fleas			X. c. per rat	Mean temperature	Mean humidity
			X. c.	Ct. c.	E. g.			
1926			*Per cent*	*Per cent*	*Per cent*			
July	4	28	100	0	0	8.0	80.4	76.8
August	20	80	100	0	0	4.0	80.7	77.7
September	22	187	98.4	0	1.6	8.0	80.8	77.06
October	17	114	99.1	0	.9	6.6	79.9	77
November	16	147	98.6	0.7	.7	9.0	78.55	79.25
December	35	218	99	0	1	6.1	76	76.6
1927								
January	34	265	98.1	0	1.9	7.6	75.3	80.9
February	51	250	98	0	2	4.8	74	79
March	46	196	97	0	3	4.1	74.95	79.55
April	47	251	95	0	5	5.0	76.2	79.6
May	29	418	100	0	0	14.4	78.5	85.5
June	39	421	100	0	0	10.8	79.2	85.95

A total of 360 live rats were trapped during the year, from which there were recovered a total of 2,575 fleas. The fleas were found to be 98.6 per cent *X. cheopis*, 0.06 per cent *C. canis* or *felis*, and 1.34 per cent *E. gallinacea*. The average number of *X. cheopis* per live rat for the year was 7.

As was to be expected, the average number of *cheopis* per live rat (*cheopix* index) is high. The monthly average of *X. cheopis* per live rat corresponded with the average monthly range of temperature and humidity. Inasmuch as the *X. cheopis* is recognized as the common vector of plague the results of the survey accomplished during this fiscal year indicate the great degree of infectibility of this port and serve to warrant the strictest enforcement of measures designed to prevent the introduction of plague-infected rats from foreign infected ports by shipping entering this port.

OPERATIONS OF THE SERVICE IN THE VIRGIN ISLANDS

Surg. J. R. Hurley, chief quarantine officer. Post-office and telegraph address, St. Thomas, Virgin Islands.

The office headquarters and detention station are located in St. Thomas. The detention facilities located in the former Danish quarantine station at East Point are owned by the harbor board and are leased to the Public Health Service. During the year the equipment has been considerably replaced and augmented. In addition to boarding, fumigation, and detention facilities at St. Thomas, there are also boarding stations maintained in two ports on the island of St. Croix. By special arrangement medical officers of the Navy on duty at those ports act as United States quarantine officers. These officers have cooperated fully with the chief quarantine officer, and amicable relations have existed continuously.

No quarantinable diseases have been encountered at any Virgin Island ports, and the public health, not only of the Virgin Islands group, but the West Indies in general, has remained good. At Kingston, Jamaica, smallpox has been prevalent in the rather mild form known locally as alastrim.

Appropriate measures according to regulations have been taken throughout the year to prevent the introduction of bubonic plague from ships from foreign ports that come alongside the wharf at St. Thomas. These ships are almost invariably loaded with cargo on reaching St. Thomas, and their average stay is but a few hours, sufficient only to take on or discharge fuel oil or coal, so their fumigation is practically precluded under the circumstances. A total of 37 vessels were fumigated at St. Thomas during the year. Most of these were small sailing vessels engaged in interisland trade. Dead rats to the total of 26 were recovered subsequent to the above fumigations. In addition to the bunkering trade, St. Thomas also enjoys an increasing tourist passenger trade; a large number of tourist ships on winter cruises called for a short stay of several hours, each having upwards of 300 passengers aboard and very large crews. Special arrangements are in effect to facilitate the quarantine inspection of these vessels, thus avoiding undue delay upon arrival.

In connection with plague quarantine, it is noted that rats of all species are relatively scarce in St. Thomas, due to at least three factors. The town is built upon the sides and base of a steep and rocky hill or mountain, not easily burrowed into by *Mus norvegicus.* Secondly, to a very large extent the buildings in St. Thomas are of substantial brick or stone construction of the old-fashioned type. There are also two or three modern reinforced concrete buildings in town. Thirdly, the mongoose runs wild in considerable numbers throughout the island. Introduced some long time ago, no doubt to catch rats, they escaped and have increased and maintained themselves successfully in the wild state. While the mongoose is infectible with plague, they also prey on rats and no doubt contribute their share in keeping down the rat population.

A total of $2,442.34 in fees for quarantine services was collected at the port of St. Thomas this year. During the same period a total of $636 was collected as quarantine fees at Frederiksted, St. Croix, Virgin Islands, and a total of $108 at Christiansted, St. Croix, Virgin Islands. All the above fees, however, are, according to law, covered into the insular treasury. Bills of health to the number of 456 have been issued at the St. Thomas quarantine office during the year, and also a total of 84 port sanitary statements issued.

TRANSACTIONS AT FOREIGN PORTS

Summary of transactions at foreign ports

Station	Vessels inspected	Vessels fumigated		Passengers and crews inspected		Bills of health countersigned
		Cyanide	Sulphur	Passengers	Crews	
Amoy, China	68	----------	----------	16,137	3,845	68
Guantanamo Bay, Cuba	0	0	0	0	0	306
Guayaquil, Ecuador	110	0	0	3,198	7,704	163
Habana, Cuba	1,988	118	0	115,116	151,421	1,988
Hong Kong, China	381	0	9	30,486	55,463	461
Progreso, Mexico	178	6	0	1,132	7,645	178
Puerto Mexico, Mexico	0	8	0	0	0	71
Shanghai, China	238	0	125	1,394	8,672	571
Tampico, Mexico	1,277	182	0	0	0	1,068
Vera Cruz, Mexico	328	98	0	1,944	17,828	328
Yokahoma, Japan [1]	376	----------	----------	----------	----------	376
Total	4,944	412	134	169,407	252,578	5,578
European ports	1,010	394	370	254,765	20,295	6,533
Total	5,954	806	504	424,172	272,873	12,111

[1] 5 months. Closed.

REPORTS FROM FOREIGN PORTS

AMOY, CHINA

Acting Asst. Surg. E. J. Strick in charge. Post-office address, care American consulate, Amoy, China.

Smallpox was present in Amoy during approximately the whole year. All passengers for the Philippines were vaccinated against this disease and were inspected for immunity. Plague and cholera also were present, and during the summer of 1926 Manila declared quarantine against Amoy because of cholera. In June, 1927, sporadic cases of plague and cholera were reported.

Outgoing quarantine measures, especially those against smallpox and cholera, are strictly enforced and included strict inspection of passengers and crew prior to the issuance of a bill of health just before the ship sailed.

GUAYAQUIL, ECUADOR

Acting Asst. Surg. Carlos V. Coello in charge. Post-office and telegraphic address, care American consulate, Guayaquil, Ecuador.

One hundred and nineteen cases of plague, with 40 deaths, occurred in Guayaquil during the calendar year 1926. Measures carried out by the local health authorities have been enforced as in previous years. Isolation, vaccination, and deratization have been practiced intensively.

During the fiscal year 1927, 279,192 rats were trapped; 608 of those examined were found infected.

The most important work in connection with plague investigation has been the examination of fleas, carried out by the Quito and Guayaquil health officers, in accordance with the agreements of the International Conference of Sanitarians held in Washington last year. The officer in charge of this work performs a daily examination of the fleas obtained from a number of rats trapped during the day, regardless of whether or not they are infected, and classification is made. In Guayaquil the prevalence of the cheopis can be considered at least as 95 per cent, being the reverse in Quito.

Four cases of smallpox occurred during the fiscal year 1927; none of them fatal. Vaccination, as usual, has been practiced on a large scale. Passengers for the canal or ports of the United States have to show evidence of recent vaccination or they have to submit to vaccination prior to embarkation.

During the fiscal year 163 bills of health were issued to vessels bound to the United States or Panama Canal. One hundred and ten of these were issued to vessels proceeding direct and following an inspection of passengers and crew just prior to ship's sailing. Fifty-three bills of health were issued to vessels proceeding by way of ports to the south, thence to ports in the United States or Panama Canal. Inspection of passengers and crew prior to ship's sailing is not done on these vessels by reason of their contacting other ports on this coast en route.

HABANA, CUBA

Acting Asst. Surg. Richard Wilson in charge. Post-office address, P. O. box 629, Habana, Cuba. Telegraphic address, Machina, Habana, Cuba.

The work of this office in brief is as follows: (1) To issue bills of health, in connection with the consul general, to vessels going to the United States and its dependencies, either direct or via foreign ports. These bills of health are delivered to the vessel at the last moment after all the requirements have been complied with. (2) To report the sanitary condition of the city and port, and if possible of the surrounding country. (3) To fumigate vessels bound for United States ports when necessary. (4) To inspect vessels, cargoes, crews, and passengers bound for United States ports when necessary. (5) To examine American seamen that are sick enough to be sent to a hospital and to report to the consul general, recommending what action to be taken.

The fumigation of vessels in this port is divided in three classes: (1) Vessels fumigated by the service. This includes vessels usually going direct to the United States or its dependencies that are fumigated to comply with the quarantine regulations. (2) Vessels fumigated by the Cuban quarantine under the supervision of the service. This includes vessels that require fumigation by the Cuban quarantine regulations and intend going to the United States, usually via Cuban ports. (3) Vessels recommended for fumigation at a United

States port, either on arrival or when empty, according to circumstances. This includes vessels in transit with cargo or passengers on board, for which reason fumigation at Habana is not advisable. Four vessels were fumigated under the first class by the service and 114 were fumigated under the second class by the Cuban authorities with service supervision for purposes of granting an indorsement of the Cuban certificate. Hydrocyanic-acid gas was the fumigant used in these fumigations. As the conditions for which fumigation was once required have disappeared, fumigations have shown a steady decrease during the past several years.

Although the number of bills of health issued has decreased this fiscal year, the number of passengers and crews subject to inspection has increased. This is due to the larger size of the vessels entering this port, varying from 10,000 to 19,000 net tonnage. Many of these vessels call at Habana en route to and from ports on the Atlantic coast of the United States and ports on the Pacific coast of both North and South America, passing through the Panama Canal. Most of these vessels stay but a few hours in this port.

During the past fiscal year no quarantinable diseases were reported at this port excepting a few cases of leprosy.

HONG KONG, CHINA

Asst. Surg. F. J. Halpin in charge. Post-office and telegraphic address, care American Consulate, Hong Kong, China.

Particular attention has been given throughout the year to steerage passengers and Asiatic crews. Inspections conducted on board ship disclose a material improvement in the sanitary standard of this type of passenger and crew.

On July 28, 1926, the steamship *Japanese Prince* arrived at this port with a suspected case of cholera. Upon arrival the patient was removed to the Government Civil Hospital and all aboard were quarantined. Diagnosis of cholera was confirmed on July 29. The crews' quarters were immediately fumigated and all on board were examined daily by the colonial medical authorities. The ship was released from quarantine July 31 and sailed the same day for Manila, P. I.

Smallpox was prevalent in Hong Kong and vicinity from late in February until June of this year. A total of 146 cases and 113 deaths were reported. The strict enforcement of vaccination by the colonial Government kept the situation well under control. The vaccination of steerage passengers and crew, inaugurated during the previous year, continued through the fiscal year 1927. Steerage passengers are required to present a certificate of vaccination showing a recent "take" or "immune reaction" before purchasing steamship tickets. The utilization of the "immune reaction" as a means of expediting the issuance of vaccination certificates proved of considerable advantage. All members of crews signed on at Hong Kong are vaccinated prior to the issuance of bills of health.

During the fiscal year a number of physical examinations were conducted at the request of the American consul general consisting principally of Chinese passengers holding overdue laborers' return certificates issued by the Bureau of Immigration of the United States or the Philippine Islands to determine, if possible, the validity of their claim that they were unable to return to the United States or the Philippine Islands within the specified time because of physical disabilities. Several physical examinations were also conducted on ex-service men at the request of the United States Bureau of Pensions.

PROGRESO, MEXICO

Acting Asst. Surg. C. E. Athey in charge. Post-office and telegraphic address, care American consulate, Progreso, Mexico.

Vessels touching at this port destined for the United States are inspected by the medical officer, who visits them daily to see that the regulations regarding the use of rat guards and fending off are complied with. The crews and passengers of all vessels bound for United States ports are inspected and temperatures taken prior to sailing and before giving the vessels a bill of health. Fumigation of such vessels is required only after six months, provided they comply with the United States quarantine regulations while in port. A majority of these vessels take advantage of the privilege allowed them to postpone fumigation until they arrive at a United States port, as this gives the vessel more latitude in the matter of loading and unloading cargo. During the past fiscal year the number of vessels fumigated decreased to about half that of the preceding fiscal year, being but six in number. The number of vessels clearing this port for United States ports show a considerable decrease for the present fiscal year.

There has been no case of yellow fever nor rodent or human plague at Progreso since 1920. The sanitary delegation of the Public Health Service of Mexico cooperates with the United States Public Health Service regarding health matters, and the antilarval commission, for the prevention of yellow fever, also cooperates with and accepts cooperation from the United States Public Health Service.

PUERTO MEXICO, MEXICO

Acting Asst. Surg. J. J. Sparks in charge. Post-office and telegraphic address, care British consulate, Puerto Mexico, Mexico.

The health conditions in Puerto Mexico have improved slightly during the year, there being a gradual decrease in the number of mosquitoes both in the town and vicinity. The public health service officer continued to inspect vessels and to fumigate them when necessary.

SHANGHAI, CHINA

Surg. V. B. Murray in charge. Post-office and telegraphic address, Care American Consulate, 1 Canton Road, Shanghai, China.

The outstanding event from a quarantine standpoint during the fiscal year was an outbreak of cholera in Shanghai, beginning the end of May and reaching its height the week of July 17, 1926, totaling several thousand cases. Smallpox was endemic but much more prevalent in the late winter. One case of typhus occurred in September, 1926. No human plague cases occurred, but one infected rat was found. Five cases of anthrax were reported in Shanghai during the year, four being due to infected shaving brushes.

Inspection is made of all personnel of ships going direct to an American port, particularly the Philippine Islands and the west coast of the United States. These vessels carry no passengers, stay in port only two or three days, and about one a month signs on Chinese crew, who are not allowed ashore at American ports. The public health officer also makes an inspection of the Chinese crew who sign on at Shanghai. Practically all of these sign on British and Dollar Line ships going south. They are in the around-the-world service; the former are freight and carry about 30 crew and the later are passenger vessels carrying about 100 crew. Vaccinations of these men are often performed en route by the ship's surgeon. The number of steerage passengers from Shanghai to an American port is usually very small, usually not exceeding a half dozen per vessel. They are inspected and provided with certificates of vaccination before embarking. There are a number of Chinese crew carried as steerage by Japanese passenger ships going to a west coast port. These are for transfer to another ship at the port of arrival as replacement crew, about 20 to 30 in number, and are not landed in the United States. First and second-class passengers are not subject to examination here, as they proceed to the United States by way of Hong Kong or Japan and are there inspected.

Few fumigations of vessels are accomplished. This is due to the short stay of vessels in this port and to being usually partially loaded with cargo, preventing efficient fumigation. These fumigations are done by a commercial fumigating company using sulphur or carbon dioxide.

There is an apparent relative scarcity of rats in Shanghai, probably due to the brick and stone construction of many of the houses and the absence of ceilings and double walls in the Chinese houses, offering less harborage.

TAMPICO, MEXICO

Acting Asst. Surg. Fleetwood Gruver in charge. Post-office and cable address, room 104, Hotel Imperial, Tampico, Mexico.

During the fiscal year no case or suspected case of yellow fever or plague was reported at this port. Sporadic cases of smallpox occur from time to time throughout the year. A total of 53,333 rodents were trapped and examined and none were found infected. Except for the absence of the diseases mentioned above the general health conditions have not changed materially within the past five years. Deaths alone are reported. There are no case reports and the general sanitary condition of the city has remained at a practical standstill.

During the year many influences have tended to reduce the shipping from this port and this is strikingly evidenced by the number of vessels cleared at the American Consulate. Principal of these influences is said to be due to the Mexican Federal Government. During the year just ended 1,277 vessels cleared through the American Consulate, of which 939 were of American register, as against 1,651 and 1,169, respectively, the preceding year.

Fumigations are done by the service at this port, using hydrocyanic-acid gas. Most of the vessels were tankers, and some were cargo and passenger vessels requiring periodic six months' fumigation. A very few vessels were fumigated because of faulty or inadequate rat guarding and fending off while in port.

VERA CRUZ, MEXICO

Acting Asst. Surg. H. E. Gimler in charge. Post-office and telegraphic address, care American Consulate, Vera Cruz, Mexico.

No cases of yellow fever, human plague, or rodent plague were reported during the year. Following a flood and cyclone on the 28th of September, 1926, there were reported from the district along the interoceanic railway a great many cases of sickness. Visits were made to the towns of Salmoral, Cardel, Antigua, and Palmar, and 82 sick people were examined, but no cases proved suspicious of yellow fever.

The sanitary conditions of the port are not good. The sewage system is old and faulty. The water supply is inadequate. Antimosquito work, carried out by the antilarvario department of the Mexican Federal Health Service, has been efficient. The house index during the year has been below 1 per cent. During the year 32 breeding places were discovered. They were localized in two areas, one near the small railway station of Los Cocos, at the south end of the town, and the other in the vicinity of the large terminal railway station, which is located in the north end of the town and near the water front. One breeding place was found in a warehouse located on No. 4 pier.

Antiplague work has also been carried out by the Mexican Federal Health Service, but not efficiently, as only a few men are employed in the trapping of rats.

YOKOHAMA, JAPAN

Surg. V. B. Murray in charge. Post-office and cable address, care American consulate, Yokohama, Japan.

The station at Yokohama was closed the latter part of the calendar year 1926, having been in operation since the beginning of the calendar year 1924, which was shortly after the earthquake that devastated Yokohama the latter part of 1923.

SERVICE OPERATIONS IN EUROPE

Senior Surg. Taliaferro Clark in charge. Post-office and telegraphic address, 10 rue de l'Elysee, Paris, France.

This is the supervisory headquarters of the operations of the Public Health Service in Europe, which embraces quarantine and immigration activities, and includes also miscellaneous medical services at the various consulates to which officers are attached as medical advisers. In addition, the Paris office is in close contact with the International Office of Public Hygiene, facilitating the exchange of sanitary information and simplifying cooperative activities of the service.

There has been noted continued improvement in the general health and sanitary conditions in Europe. Smallpox has continued to prevail extensively in England, but with practically no mortality. Minor outbreaks and sporadic cases have been notified in France, Greece, Italy, and Poland. The typhus-fever situation in Russia is apparently unchanged as compared with last year. The disease continues to be more or less widely spread through Poland, though not in epidemic proportions, and likewise in Rumania. Sporadic cases have been notified in Bulgaria, France, Greece, Ireland, Italy, Yugoslavia, Latvia, Lithuania, and Scotland. Algeria, Greece, and Tunisia continued to be endemic sources of plague. Two sporadic cases of plague, with one death, occurred in Liverpool in August, 1926, in the person of a dock laborer and his child. It is believed the infection was acquired on a ship and conveyed to his home. There was no spread due to the prompt diagnosis and institution of preventive measures.

With the continued improvement in the general health and sanitary conditions in Europe and the new policy of the service making possible the acceptance of foreign official fumigation certificates properly visaed by a United States counsel the necessity decreased for maintaining strict sanitary supervision at all important European ports, and so was discontinued at Libau, Latvia, August 31, 1926; at Genoa, Italy, November 5, 1926; at Cherbourg, France, February 28, 1927; and at Bordeaux, France, April 30, 1927. There is no reason to believe that these changes have militated against the effectiveness of the quarantine protection to the United States.

Supervision of the measures taken to comply with the United States quarantine regulations in European ports during the fiscal year 1926–27 was maintained largely by commissioned regular officers of the service, due to their assignment to a number of ports of embarkation for the combined immigration and quarantine duties.

As in previous years, service officers have continued to serve in an advisory capacity to consular officers on medical questions, in addition to advising on immigration and quarantine matters, supervise the fumigation of vessels at certain ports, and to collect and transmit sanitary information.

Associated with the routine quarantine inspection of embarking passengers by service officers is the final medical examination of immigrants just prior to embarkation. This examination is usually made with the cooperation of the medical representatives of the transportation companies and constitutes a strong second line of defense against entry to the United States of aliens inadmissible on medical grounds. The purpose of this examination is to guard against the embarkation of persons who might have developed disease or suffered injury in the time which has elapsed between the granting of a visa and the date of sailing.

The following four tables summarize the quarantine activities of the various European ports where officers are stationed. The first table shows the quarantine treatment and the number of passengers and crew treated at primary ports of embarkation.

The second table shows the quarantine treatment and the number of transmigrant passengers treated upon arrival at the various ports of embarkation which have come from other ports in Europe for final embarkation.

The third table shows the quarantine treatment and the number of transmigrant passengers treated at the various ports where officers are stationed prior to proceeding to some other port for final embarkation.

The fourth table summarizes the principal of miscellaneous quarantine activities at the various European ports.

Primary treatment of passengers and crew prior to embarkation

Port	Passengers inspected	Crew inspected	Passengers vaccinated	Crew vaccinated	Passengers deloused	Crew deloused	Passengers detained	Passengers rejected
Antwerp	5,583	1	624	0	662	0	694	1
Belfast	868	261	0	0	75	0	0	0
Bremen	36,761	0	1,782	0	4,005	0	1,813	15
Cobh	28,071	0	331	0	17,842	0	0	0
Copenhagen	1,771	0	0	0	0	0	0	0
Danzig	5,733	0	0	0	5,053	0	0	0
Glasgow	15,477	0	10,464	0	3	0	0	3
Goteborg	11,695	0	0	0	29	0	14	0
Hamburg	33,938	0	414	0	1,717	0	762	0
Liverpool	25,825	0	1,741	0	1,842	0	94	9
London	2,421	0	0	0	0	0	0	0
Londonderry	6,463	0	0	0	846	0	0	0
Naples	38,799	10,940	38,799	0	23,617	0	0	0
Oslo	7,693	0	0	0	13	0	0	1
Patras	1,975	4,989	1,967	161	1,179	241	0	8
Piræus	4,494	4,096	4,406	971	4,002	3	0	0
Rotterdam	5,292	8	0	0	1,468	0	1,597	0
Southampton	21,906	0	246	0	642	0	11	0
Total	254,765	20,295	60,774	1,132	62,995	244	4,985	37

Treatment of passengers coming from other ports for embarkation (transmigrants)

Treatment	Antwerp	Bremen	Copenhagen	Danzig	Goteborg	Liverpool	Oslo	Rotterdam	Southampton	Total
Passengers inspected	2,759	125	1,307	113	141	4,078	58	1,165	5,713	15,459
Passengers vaccinated	607	0	0	0	0	7	0	0	92	706
Passengers deloused	156	20	0	15	94	93	0	0	0	378
Passengers detained	64	18	0	0	97	78	0	0	0	257
Passengers rejected	11	6	0	0	2	54	0	0	11	84
Baggage disinfected and passed	2,680	13	0	15	176	42	0	0	0	2,926
Baggage inspected and passed	718	0	0	45	21	0	0	0	0	784

Primary treatment of passengers proceeding to another port for embarkation

Treatment	Class	Antwerp	Danzig	Hamburg	Libau	Liverpool	Piræus	Rotterdam	Total
Total transmigrants	Second	0	2,026	179	140	0	10	85	2,440
	Third	78	29,925	1,259	1,629	4	384	613	33,892
Passengers vaccinated	Second	0	0	42	0	0	10	0	52
	Third	78	0	622	0	0	384	0	1,084
Passengers deloused	Second	0	1,474	33	101	0	9	83	1,700
	Third	78	29,489	718	537	4	368	613	31,807
Passengers inspected	Second	0	552	146	39	0	1	2	740
	Third	0	436	541	1,092	0	16	0	2,085
Baggage disinfected and passed.	Second	0	1,429	51	176	0	0	140	1,796
	Third	53	29,180	962	867	4	450	832	32,348
Baggage inspected and passed.	Second	0	10	173	40	0	14	3	240
	Third	27	56	577	147	0	164	0	971
Countries of departure:									
Albania		0	0	0	0	0	25	0	25
Austria		0	0	13	0	0	0	0	13
Bulgaria		0	0	0	0	3	0	0	3
Czechoslovakia		0	0	1	0	0	0	0	1
Danzig Free City		0	216	0	0	0	0	0	216
Estonia		0	61	0	23	0	0	2	86
Germany		0	154	648	0	0	0	0	802
Greece		0	0	0	0	0	333	0	333
Italy		0	0	0	0	0	36	0	36
Yugoslavia		78	0	4	0	1	0	0	83
Latvia		0	267	1	187	0	0	4	459
Lithuania		0	733	122	331	0	0	22	1,208
Poland		0	30,286	6	119	0	0	1	30,412
Rumania		0	23	643	0	0	0	0	666
Russia		0	211	0	1,109	0	0	669	1,989

Treatment baggage, vessels, and service beneficiaries

Port	Baggage disinfected and passed	Baggage inspected and passed	Vessels inspected	Vessels fumigated	Bills of health countersigned	Medical examination of service beneficiaries
Antwerp	760	952	120	108	164	46
Belfast	15	94	0	0	78	115
Bremen	2, 747	2, 186	0	84	429	0
Cobh	10, 021	9, 599	0	0	212	0
Copenhagen	0	0	4	0	175	22
Danzig	5, 036	41	189	0	24	0
Glasgow	0	0	25	50	316	0
Goteborg	35	5	30	0	98	2
Hamburg	3, 825	70, 555	298	244	908	1
Libau [1]	0	19	0	0	0	0
Liverpool	137	0	0	107	1, 007	6
London	0	0	1	66	914	1
Londonderry	35	812	0	0	35	0
Naples	33, 220	32, 425	169	24	283	87
Oslo	0	0	1	0	122	0
Patras	1, 690	1, 020	40	0	40	41
Piræus	3, 260	1, 237	57	0	75	26
Rotterdam	1, 819	2, 831	76	71	1, 135	3
Southampton	872	1	0	10	518	17
Total	63, 472	121, 777	1, 010	764	6, 533	367

[1] Operations discontinued Aug. 31, 1926.

SUMMARY OF QUARANTINE TRANSACTIONS AT CONTINENTAL, INSULAR, AND FOREIGN STATIONS

Summary of quarantine transactions at continental, insular, and foreign stations for the fiscal year ended June 30, 1927

Station	Vessels inspected	Vessels fumigated		Passengers inspected	Crews inspected	Bills of health issued
		Cyanide	Sulphur			
Continental	20, 284	3, 317	1, 797	[1] 820, 793	1, 140, 922	0
Insular	2, 991	129	563	169, 461	226, 373	4, 324
Foreign	5, 954	806	504	424, 172	272, 873	12, 111
Total	29, 229	4, 252	2, 864	1, 414, 426	1, 640, 168	16, 435

[1] Maritime stations, 737,540; border stations, 83,253. Statistics do not include "local" travelers at border stations, numbering 6,123,959, who, however, were given cursory inspection.

MEDICAL INSPECTION OF ALIENS

During the fiscal year there were examined by medical officers of the United States Public Health Service 881,699 alien passengers for the purpose of detecting physical or mental defects or diseases, as provided for in the United States immigration laws, as compared with 614,972 for the fiscal year ended June 30, 1926; 545,472 for the fiscal year ended June 30, 1925; 938,928 for the fiscal year ended June 30, 1924; 745,515 for the fiscal year ended June 30, 1923; and 586,228 for the fiscal year ended June 30, 1922. In addition to the passengers examined, 996,198 alien seamen were inspected, as provided for in the act of February 5, 1917, as compared with 872,842 for the fiscal year ended June 30, 1926; 854,915 for the fiscal year ended June 30, 1925; 874,962 for the fiscal year ended June 30, 1924; 826,295 for the fiscal year ended June 30, 1923; and 783,193 for the fiscal year ended June 30, 1922. The accompanying tables present in detail the data relative to the inspection and certification of alien passengers and alien seamen.

EXAMINATION OF PROSPECTIVE IMMIGRANTS ABROAD

The experiment of examining prospective immigrants in the country of origin, which was begun during the previous fiscal year, continued during the fiscal year 1927, and apparently has proved very successful. Early in the fiscal year this work was extended to Copenhagen, Denmark; Berlin, Bremen, Cologne, Hamburg, and Stuttgart, Germany; and Bergen and Oslo, Norway. Later in the year it was inaugurated at Goteborg and Stockholm, Sweden, and Warsaw, Poland. Through representation to the Department of State by the respective governments, arrangements are now being completed to open new stations at Genoa, Naples, and Palermo, Italy, and the Prague, Czechoslovakia, early in the new fiscal year.

There were 148,539 applicants for immigration visas examined by medical officers abroad. Of this number, 1,502 were reported to the consular officers as afflicted with one or more of the diseases listed in class A as mandatorily excludable; 11,485 were reported as afflicted with a disease or condition listed as class B as liable to affect their ability to earn their own living; 1,496 of the applicants reported in class A and 5,084 of those reported in class B were refused immigration visas by the consular officers because of the result of the medical examination.

Of 141,959 aliens who had been given a preliminary medical examination abroad and to whom visas had been issued, only a total of 9 were certified upon arrival at a United States port as being afflicted with class A diseases, resulting in mandatory deportation.

Alien passengers inspected and certified at all ports in the United States and its dependencies and in Canada

Place	Number of alien passengers examined	Alien passengers certified					Important diseases for which certification was made											
		Class A		Class B	Class C	Total	Idiocy, imbecility, feeble-minded, mentally defective	Epilepsy	Insanity	Psychopathic inferiority	Chronic alcoholism	Tuberculosis	Trachoma	Favus	Syphilis	Soft chancre	Gonorrhea	Clonorchiasis
		(1) Idiocy, imbecility, feeble-minded, insanity, mentally defective, epilepsy, tuberculosis, chronic alcoholism	(2) Loathsome contagious or dangerous contagious diseases	Disease or defect which affects ability to earn a living	Disease or defect of less degree													
Aberdeen, Wash	6					0												
Ajo, Ariz	226	4	5	1		10						4	3				2	
Astoria, Oreg	3					0												
Baltimore, Md	185		1	1		2											1	
Bellingham, Wash	0					0												
Blaine, Wash	1,015	64	12	116	73	265	17	6	3	26	9	3	6				6	
Boston, Mass	12,630	4	12	600	912	1,528	1		2			1	1			1	1	9
Brownsville, Tex.[1]	2,956	3	46	207	41	297				3		1	13		1	5	20	
Brunswick, Ga	0					0												
Buffalo, N. Y	8,098	10	1	79		90	2		7	1							1	
Calais, Me	90					0												
Calexico, Calif	4,570	11	10	8	16	45	5					4	5		1		5	
Charleston, S. C	17					0												
Columbus, N. Mex	452					0												
Coos Bay, Oreg	0					0												
Corpus Christi, Tex	0					0												
Delaware Breakwater, Del	0					0												
Del Rio, Tex	1,799			4		4												
Detroit, Mich	5,681	102	30	362	98	592	32	6		13	10	15	1		5		11	
Douglas, Ariz	3,641	6	51	25	37	119	2			2		2	49		1		1	
Duluth, Minn	6,484	2	2	5	2	11	1		1						2			
Eagle Pass, Tex.[2]	18,073	8	4	20		32		1		2		4			2	1		
Eastport, Idaho	2,598	4		156	87	247		1		2		1						
Eastport, Me	12,128	1		5		6												
El Paso, Tex	45,619	12	77	749	599	1,437	3	1	3	1		4	8	15	32	2	20	
Erie, Pa.[3]	0					0												

Fall River, Mass	4					0												
Fernandina, Fla	0					0												
Fort Monroe, Va	910					0												
Freeport, Tex	1					0												
Galveston, Tex	596					0												
Gloucester, Mass	0					0												
Halifax, Novia Scotia	4,097	7		155	134	296		1	4	1		1						
Havre, Mont	10					0												
Hidalgo, Tex.[4]	195,860	1	70	18	23	112				1			59		2	3	1	
Honolulu, Hawaii	4,140	3	6	18	13	40			1			2					2	4
Houlton, Me	33	4	2	1		7			1	2		1					2	
International Falls, Minn	980	13	2	69		84	2			8		3						
Jackman, Me	6	3			3	6				3								
Jacksonville, Fla	4					0												
Ketchikan, Alaska	0					0												
Key West, Fla	7,977	2		28		30	2											
Laredo, Tex.[5]	40,440	17	183	496	20	716	12	3		1		1	23	1	3	19	117	
Lewiston, N. Y	0																	
Marcus, Wash	119	1		10	7	18				1								
Miami, Fla	1,781	5				5	5											
Mobile, Ala	122				1	1												
Montreal, Canada	21,500	63	70	914	205	1,252	25	4	8	4		22	49			10	9	
Naco, Ariz	3,146	22	25	18	1	66	1		5	7	8	1	7		13		5	
New Bedford, Mass	0																	
New Orleans, La	4,656		1			1							1					
New London, Conn	0					0												
Newport, Vt	3,044	11	1	79	43	134	4		5			2					1	
New York, N. Y	300,790	77	104	8,777	3,054	12,012	11	5	14	2	1	44	14		10	12	63	
Niagara Falls, N. Y	3,036	7		82	48	137			4	1		2						
Nogales, Ariz	17,075	7	25	110	2	144		1		2		4	22				3	
Noyes, Minn	423	16	23	20	7	66	5	1	4	1		5	16		3		4	
Ogdensburg, N. Y	47	2		10	8	20	1					1						
Oroville, Wash	204			2		2												
Pascagoula, Miss	1					0												
Pensacola, Fla	12					0												
Perth Amboy, N. Y	2					0												
Philadelphia, Pa	446					0												
Philippine Islands[6]	15,273	1	139	67	4	211						1	33				2	4
Portal, N. Dak	99	5		42		47	1		2			2						
Port Angeles, Wash	0					0												
Port Huron, Mich	2,119	14	3	156	60	233	1		2	7	2	2	2			1		
Portland, Me	39					0												
Portland, Oreg	7	3		3		6	3											
Porto Rico (other than San Juan)	2,210			1		1												
Port San Luis, Calif	0					0												
Port Townsend, Wash	2,910			1		1												
Presidio, Tex	71					0												
Providence, R. I	4,357		5	86	15	106							5					
Quebec, Canada	7,142	6		61	11	78				3	1	2						
Rio Grande, Tex.[7]	17,159	6	56	2		64			4			2	55					

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[1] 1 case leprosy, Brownsville, Tex.
[2] 1 case leprosy, Eagle Pass, Tex.
[3] Erie, Pa., opened, July 6, 1926.
[4] 1 case leprosy, Hidalgo, Tex.
[5] 1 case leprosy, Laredo, Tex.
[6] 1 case leprosy, Manila, P. I.
[7] 1 case leprosy, Rio Grande, Tex.

Alien passengers inspected and certified at all ports in the United States and its dependencies and in Canada—Continued

Place	Number of alien passengers examined	Alien passengers certified					Important diseases for which certification was made											
		Class A		Class B	Class C													
		(1) Idiocy, imbecility, feeble-minded, insanity, mentally defective, epilepsy, tuberculosis, chronic alcoholism	(2) Loathsome contagious or dangerous contagious diseases	Disease or defect which affects ability to earn a living	Disease or defect of less degree	Total	Idiocy, imbecility, feeble-minded, mentally defective	Epilepsy	Insanity	Psychopathic inferiority	Chronic alcoholism	Tuberculosis	Trachoma	Favus	Syphilis	Soft chancre	Gonorrhea	Clonorchiasis
Rouses Point, N. Y.	1,008	9	9	50	7	75	2		1		1	5			1	2	6	
Sabine, Tex.	20					0												
St. Albans, Vt.	36	6		4		10	2	1	2		1							
St. John, New Brunswick	4,563	12		79	36	127	3		2	3		4						
San Diego, Calif.	1,214	4	2	3	1	10				2		2			1		1	
San Francisco, Calif.	10,280		55	66	28	149									1		3	51
San Juan, P. R.	5,534			1	7	8												
San Pedro, Calif.	5,996	3	1	13		17		1				2	1					
Sasabe, Ariz.	429		1			1						1						
Sault Ste. Marie, Mich.	260	5	1		4	10			5								1	
Savannah, Ga.	76					0												
Scobey, Mont.	64	1		8	5	14						1						
Seattle, Wash.	937	14	51	95	27	187		2	1	7		4	2		7	2	10	30
Sumas, Wash.	495	5	15	81	14	115	2		1			2	1		2		12	
Sweetgrass, Mont.	678					0												
Tacoma, Wash.	8					0												
Tampa, Fla.	1,881					0												
Tia Juana, Calif. (San Ysidro)	2,932	11	15	52	167	245	2		1			8	9			2	4	
Tucson, Ariz.	436	9	63	28	1	101			1	3	1	4	21		5	2	35	
Van Buren, Me.	115	2	2	11	9	24	1			1							2	
Vanceboro, Me.	1,083	3				3				2		1						
Vancouver, B. C.	1,984	19	1	123	33	176	4	4	1	4		6						
Victoria, B. C.	1,498	6		22	60	88	1	2		1		2						
Vineyard Haven, Mass.	0					0												
West Palm Beach, Fla.	0																	

Wilmington, N. C.	0					0												
Winnipeg, Canada	11,899	70	17	1,206	669	1,962	10	7	2	16	2	33	6		4		3	
Yarmouth, Nova Scotia	39,154	7		184	198	389	5	1				1						
Total	881,699	713	1,199	15,590	6,790	24,292	168	48	87	133	36	213	412	16	96	62	354	98

Alien seamen inspected and certified at all ports in the United States and Canada

Place	Number of alien seamen examined	Alien seamen certified					Important diseases for which certification was made											
		Class A		Class B	Class C													
		(1) Idiocy, imbecility, feeble-minded, insanity, mentally defective, epilepsy, tuberculosis, chronic alcoholism	(2) Loathsome contagious or dangerous contagious diseases	Disease or defect which affects ability to earn a living	Disease or defect of less degree	Total	Idiocy, imbecility, feeble-minded, mentally defective	Epilepsy	Insanity	Psychopathic inferiority	Chronic alcoholism	Tuberculosis	Trachoma	Favus	Syphilis	Soft chancre	Gonorrhea	Clonorchiasis
Aberdeen, Wash.	2,786		6			6										3	3	
Ajo, Ariz.	0					0												
Astoria, Oreg.	5,423		24	1		25									6	6	10	
Baltimore, Md.	44,567	3	157	33	4	197						3			29	56	72	
Bellingham, Wash.	0					0												
Blaine, Wash.	2		2			2									1		1	
Boston, Mass.	55,063	5	227	288	337	857			1	1		3	87		22	61	57	
Brownsville, Tex.	0					0												
Brunswick, Ga.	340		1			1											1	
Buffalo, N. Y.	6,880		3	28		31											3	
Calais, Me.	0					0												
Calexico, Calif.	0					0												
Charleston, S. C.	5,814	2	11	22	1	36						2				5	6	
Columbus, N. Mex.	0					0												
Coos Bay, Oreg.	953					0												
Corpus Christi, Tex.	16					0												
Delaware Breakwater, Del.	130					0												
Del Rio, Tex.	0					0												
Detroit, Mich.	150					0												
Douglas, Ariz.	0					0												
Duluth, Minn.	392		4	2	1	7										1	3	
Eagle Pass, Tex.	0					0												
Eastport, Idaho	0					0												
Eastport, Me.	720					0												
El Paso, Tex.	0					0												
Erie, Pa.[1]	63					0												

Fall River, Mass	278		1			1									1			
Fernandina, Fla	0					0												
Fort Monroe, Va	70, 582	22	243	60	25	350	4		1			17	1		77	8	150	
Freeport, Tex	699			1		1												
Galveston, Tex	21, 691	5	43	9		57			5						13	2	28	
Gloucester, Mass	115			2		2												
Halifax, Nova Scotia	0					0												
Havre, Mont	0					0												
Hidalgo, Tex	0					0												
Honolulu, Hawaii	20, 861	1	13	20		34						1	2		5	1	4	
Houlton, Me	0					0												
International Falls, Minn	0					0												
Jackman, Me	0					0												
Jacksonville, Fla	1, 701		5			5										1	4	
Ketchikan, Alaska	0					0												
Key West, Fla	3, 799					0												
Laredo, Tex	0					0												
Lewiston, N. Y	0																	
Marcus, Wash	0					0												
Miami, Fla	9, 540	1	13		3	17	1									2	11	
Mobile, Ala	7, 650		19	10	1	30									8	3	8	
Montreal, Canada	0					0												
Naco, Ariz	0					0												
New Bedford, Mass	0					0												
New London, Conn	301					0												
New Orleans, La	55, 592	6	219	6	5	236						6			100	21	94	
Newport, Vt	0																	
New York, N. Y	503, 040	14	603	19	2	638		1	8	1		4	20		65	202	316	
Niagara Falls, N. Y	0					0												
Nogales, Ariz	0					0												
Noyes, Minn	0					0												
Ogdensburg, N. Y	1, 031	1	1	26	6	34						1					1	
Oroville, Wash	0					0												
Pascagoula, Miss	46					0												
Pensacola, Fla	2, 352		9	1	21	31									1	4	4	
Perth Amboy, N. Y	1, 698		6			6									1		5	
Philadelphia, Pa	37, 880	8	177	112	43	340	4		1			3	2		75	6	91	
Philippine Islands	0					0												
Portal, N. Dak	0					0												
Port Angeles, Wash	97					0												
Port Huron, Mich	0					0												
Portland, Me	4, 466		11	1		12									2	5	1	
Portland, Oreg	3				1	1												
Porto Rico (other than San Juan)	9, 176		12			12									1	4	7	
Port San Luis, Calif	488					0												
Port Townsend, Wash	17, 269		14			14										6	8	
Presidio, Tex	0					0												
Providence, R. I	3, 465		12	3	5	20									2	3	7	
Quebec, Canada	0					0												
Rio Grande, Tex	0					0												
Rouses Point, N. Y	0					0												

[1] Erie, Pa., opened July 6, 1926.

Alien seamen inspected and certified at all ports in the United States and Canada—Continued

Place	Number of alien seamen examined	Alien seamen certified					Important diseases for which certification was made											
		Class A		Class B	Class C													
		(1) Idiocy, imbecility, feeble-minded, insanity, mentally defective, epilepsy, tuberculosis, chronic alcoholism	(2) Loathsome contagious or dangerous contagious diseases	Disease or defect which affects ability to earn a living	Disease or defect of less degree	Total	Idiocy, imbecility, feeble-minded, mentally defective	Epilepsy	Insanity	Psychopathic inferiority	Chronic alcoholism	Tuberculosis	Trachoma	Favus	Syphilis	Soft chancre	Gonorrhea	Clonorchiasis
Sabine, Tex	6,401		15			15									5	4	6	
St. Albans, Vt	0					0												
St. John, New Brunswick	0					0												
San Diego, Calif	7,577				1	1												
San Francisco, Calif	22,280	1	6	1	3	11						1				2	4	
San Juan, P. R	14,672	1	11	1	3	16						1			1	9	1	
San Pedro, Calif	40,456	4	12	14	15	45		1	1			2			4	1	7	
Sasabe, Ariz	0					0												
Sault Ste. Marie, Mich	0					0												
Savannah, Ga	3,705		12	3		15										10	2	
Scobey, Mont	0					0												
Seattle, Wash	22		3	3	3	9									1	2		
Sumas, Wash	0					0												
Sweetgrass, Mont	0					0												
Tacoma, Wash	603					0												
Tampa, Fla	0					0												
Tia Juana, Calif. (San Ysidro)	0					0												
Tucson, Ariz	0					0												
Van Buren, Me	0					0												
Vanceboro, Me	3			1		1												
Vancouver, British Columbia	0					0												
Victoria, British Columbia	3,320					0												
Vineyard Haven, Mass	38					0												
West Palm Beach, Fla	0					0												
Wilmington, N. C	0					0												
Winnipeg, Canada	0					0												
Yarmouth, Nova Scotia	2				1	1												
Total	996,198	74	1,895	667	481	3,117	9	2	17	2	0	44	112	0	420	428	915	0

Summary of medical inspection of aliens, United States and Canada, fiscal year 1926–27

GROUP I.—ALIEN PASSENGERS NOT EXAMINED ABROAD—EXAMINED UPON ARRIVAL

Class	Total examined	Intensively examined	Passed	Certified on arrival				Total certified
				A–I	A–II	B	C	
First	562, 226	37, 368	60, 284	614	831	6, 208	2, 838	10, 491
Second	75, 616	1, 022	72, 786	18	17	1, 952	522	2, 509
Third	149, 243	41, 901	142, 237	72	316	3, 223	2, 101	5, 712
Stowaways	1, 370	1, 079	1, 336	2	33	15	4	54
Total	788, 455	81, 370	276, 643	706	1, 197	11, 398	5, 465	18, 766

GROUP II.—ALIEN PASSENGERS EXAMINED ABROAD—REEXAMINED ON ARRIVAL

Class	Total examined	Intensively examined	Passed abroad	Examination incomplete, classification of condition noted				Total incomplete examinations certified	Passed on arrival	Certified on arrival				Total certified
				A–I	A–II	B	C			A–I	A–II	B	C	
First	19, 276	348	18, 993	1	----	245	33	270	18, 662	1	----	182	27	210
Second	23, 371	400	21, 699	----	----	1, 385	287	1, 671	21, 344	1	1	1, 513	352	1, 867
Third	50, 597	1, 879	45, 324	----	----	3, 196	2, 060	5, 256	47, 054	5	1	2, 497	946	3, 449
Total	93, 244	2, 627	86, 016	1	----	4, 826	2, 380	7, 197	87, 060	7	2	4, 192	1, 325	5, 526

GROUP III.—ALIEN SEAMEN EXAMINED ON ARRIVAL

	Total examined	Intensively examined	Passed	Certified				Total certified
				A–I	A–II	B	C	
Alien crew	996, 081	455, 177	992, 466	74	1, 895	665	481	3, 115
Workaways	117	10	115	0	0	2	0	2
Total	996, 198	455, 187	992, 581	74	1, 895	667	481	3, 117

EUROPEAN PORTS

Senior Surg. Taliaferro Clark in charge. Post-office address, 10 Rue de l'Elysée, Paris, France.

The medical examination of applicants for immigration visas in countries of origin by officers of the United States Public Health Service, first inaugurated on August 1, 1925, in England, Scotland, northern Ireland, and the Irish Free State, was carried out on a more extended scale during the fiscal year ended June 30, 1927. The demonstrated advantages to prospective immigrants, communities of origin, and transportation companies brought new requests to the Department of State for the extension of the plan to other countries. As a result of official representation and agreement, medical examinations by service officers were started on July 1, 1926, at the American consulates in Berlin, Bremen, Cologne, Hamburg, and Stuttgart, Germany; at Bergen and Oslo, Norway, on July 15, 1926; at Copenhagen, Denmark, on July 19, 1926; at Goteborg and Stockholm, Sweden, and Warsaw, Poland, on September 1, 1926. These additions increased to 20 the total number of American consulates where the medical examination of applicants were made during the fiscal year, representing nine countries. The spirit of cooperation between the representatives of the three departments—State, Labor, and Treasury—has been excellent and has contributed to the success of the work.

During the fiscal year ended June 30, 1927, a total of 148,539 applicants for immigration visas were given medical examinations. Of the total examined, 12,987, or 8.74 per cent, were found to have mental or physical disabilities, and 6,580, or 4.43 per cent, of the total examined were refused visas.

Distribution according to class of applicants for immigration visas who were medically examined at each station, July 1, 1926, to June 30, 1927

Country and consular office	Total applicants examined	Number of applicants in each class			Percentage of applicants in each class		
		Quota	Nonquota	Nonimmigrant	Quota	Nonquota	Nonimmigrant
Belgium: Antwerp	1,248	875	373	0	70.11	29.89	0
England:							
Liverpool	6,705	6,010	693	2	89.63	10.33	.04
London	5,916	4,631	1,285	0	78.28	21.72	0
Southampton	3,002	2,581	314	107	82.64	10.46	6.90
Ireland:							
Belfast	3,973	3,697	249	27	93.05	6.27	0.68
Cobh	10,135	9,855	255	25	97.24	2.51	.25
Dublin	17,420	17,083	282	55	98.02	1.62	.36
Scotland: Glasgow	14,582	13,438	1,144	0	92.15	7.85	0
Germany:							
Berlin	13,003	12,599	404	0	96.90	3.10	0
Bremen	6,206	5,966	239	1	96.13	3.85	.02
Cologne	13,418	13,125	293	0	97.89	2.11	0
Hamburg	6,040	5,727	313	0	94.82	5.18	0
Stuttgart	16,107	15,813	294	0	98.17	1.83	0
Holland: Rotterdam	2,253	1,978	274	1	87.80	12.15	.05
Poland: Warsaw	10,389	5,129	5,260	0	49.38	50.62	0
Denmark: Copenhagen	3,092	2,720	372	0	87.97	12.03	0
Norway:							
Bergen	2,335	2,205	130	0	94.43	5.57	0
Oslo	4,662	3,823	378	461	82.01	8.12	9.87
Sweden:							
Goteborg	4,618	4,345	270	3	94.08	5.84	.08
Stockholm	3,435	3,304	131	0	96.19	3.81	0
All countries	148,539	134,904	12,953	682	90.82	8.72	.46

The greatest relative number of quota applicants appeared at Warsaw, Poland; Antwerp, Belgium; and London, England, comprising 50.62 per cent, 29.89 per cent, and 21.72 per cent, respectively, of the total number examined at each of these stations. There was a noticeable increase in the proportion of nonquota applicants referred for medical examination, 8.72 per cent of the total examined, as compared with 6.62 per cent in the preceding year. On the other hand, there was decided diminution in the number of nonimmigrants referred for examination, 0.46 per cent of the total examined as compared with 1.08 per cent for the preceding year. This is a healthy tendency, evidencing the exercise of wise discretion by consular officers.

Approximately 63 per cent of all applicants were examined at 7 of the 20 consulates where medical examinations by service officers are carried on, namely, Cobh and Dublin, Irish Free State; Glasgow, Scotland; Berlin, Cologne, and Stuttgart, Germany; and Warsaw, Poland. The examinations were accomplished by three medical officers each at Berlin and Dublin, and by two at each of the other five consulates mentioned.

Of every 1,000 immigrants examined, approximately 88 were found to be handicapped by defects sufficiently serious to warrant notification. The pecentage of the total applicants examined, who were notified for mental and physical disabilities, was highest in Poland, Belgium, Sweden, England, and the Irish Free State, 14.91 per cent, 14.82 per cent, 13.10 per cent, 11.34 per cent, and 9.79 per cent, respectively. These differences can not be viewed as representing the personal equation of the medical officers especially experienced in immigration work, but rather as the reflection, in large measure, of the economic, sanitary, and social environment of individual applicants.

Number and percentage of applicants for immigration visas who were notified for different classes of disabilities

	Total number of persons examined	Number notified for—			Percentage of persons examined who were notified for—		
		Class A conditions	Class B conditions	Total classes A and B	Class A conditions	Class B conditions	Total classes A and B
Belgium: Antwerp	1, 248	25	160	185	2. 00	12. 82	14. 82
England:							
Liverpool	6, 705	34	1, 082	1, 116	. 51	16. 13	16. 64
London	5, 916	19	285	304	. 32	4. 82	5. 14
Southampton	3, 002	19	333	352	. 63	11. 09	11. 72
Total	15, 623	72	1, 700	1, 772	. 46	10. 88	11. 34
Northern Ireland: Belfast	3, 973	16	306	322	. 40	7. 70	8. 10
Ireland:							
Cobh	10, 135	89	1, 525	1, 614	. 88	15. 05	15. 93
Dublin	17. 420	360	826	1, 186	2. 06	4. 74	6. 80
Total	27, 555	449	2, 351	2, 800	1. 26	8. 53	9. 79
Scotland: Glasgow	14, 582	25	767	792	. 17	5. 26	5. 43
Germany:							
Berlin	13, 003	139	1, 036	1, 175	1. 69	7. 96	9. 65
Bremen	6, 206	29	343	372	. 47	5. 52	5. 99
Cologne	13, 418	60	923	983	. 45	6. 88	7. 33
Hamburg	6, 040	28	227	255	. 46	3. 76	4. 22
Stuttgart	16, 107	90	834	924	. 56	5. 17	5. 73
Total	54, 774	346	3, 363	3, 709	. 63	6. 14	6. 77
Holland: Rotterdam	2, 253	19	191	210	. 84	8. 49	9. 31
Poland: Warsaw	10, 389	463	1, 087	1, 550	4. 45	10. 46	14. 91
Denmark: Copenhagen	3, 092	6	117	123	. 19	3. 78	3. 98
Norway:							
Bergen	2, 335	2	118	120	. 08	5. 14	5. 24
Oslo	4, 662	36	313	349	. 77	6. 71	7. 48
Total	6, 997	38	431	469	. 54	6. 16	6. 70
Sweden:							
Goteborg	4, 618	20	881	901	. 43	19. 07	19. 50
Stockholm	3, 435	23	131	154	. 67	3. 81	4. 48
Total	8, 053	43	1, 012	1, 055	. 53	12. 57	13. 10
Grand total	148, 539	1, 502	11, 485	12, 987	1. 01	7. 74	8. 75

The variation in the percentages of notified applicants who had class A defects was larger than that for class B conditions. This is shown more clearly in Table 3.

Percentage distribution of persons notified for disabilities according to class of condition

Country and consular office	Percentage of notified applicants who had—	
	Class A conditions	Class B conditions
Belgium: Antwerp	13.51	86.49
England:		
Liverpool	3.05	96.95
London	6.25	93.75
Southampton	5.04	94.60
North of Ireland: Belfast	4.96	95.04
Irish Free State:		
Cobh	5.51	94.49
Dublin	30.35	69.65
Scotland: Glasgow	3.15	96.85
Germany:		
Berlin	11.83	88.17
Bremen	7.80	92.20
Cologne	6.10	93.90
Hamburg	11.00	89.00
Stuttgart	9.74	90.26
Holland: Rotterdam	9.05	90.95
Poland: Warsaw	29.86	70.14
Denmark: Copenhagen	4.88	95.12
Norway:		
Bergen	1.66	98.34
Oslo	10.31	89.69
Sweden:		
Goteborg	2.22	97.78
Stockholm	14.92	85.08
All stations	11.56	88.44

Approximately 44 out of every 1,000 applicants examined were refused visas on medical grounds.

Number and percentage of total persons examined who were refused visas on medical notification for different classes of disabilities

	Total number of persons examined	Number refused visas for—			Percentage of persons examined who were refused visas for—		
		Class A conditions	Class B conditions	All conditions classes A and B	Class A conditions	Class B conditions	All conditions classes A and B
Belgium: Antwerp	1,248	24	24	48	1.92	1.92	3.84
England:							
Liverpool	6,705	34	639	673	.51	9.53	10.04
London	5,916	19	67	86	.32	1.13	1.45
Southampton	3,002	19	58	77	.63	1.93	2.56
Total	14,623	72	764	836	.49	5.22	5.71
Northern Ireland: Belfast	3,973	16	200	216	.40	5.03	5.43

Number and percentage of total persons examined who were refused visas on medical notification for different classes of disabilities—Continued

	Total number of persons examined	Number refused visas for—			Percentage of persons examined who were refused visas for—		
		Class A conditions	Class B conditions	All conditions classes A and B	Class A conditions	Class B conditions	All conditions classes A and B
Ireland:							
Cobh	10,135	88	777	865	0.87	7.66	8.53
Dublin	17,420	360	564	924	2.06	3.24	5.30
Total	27,555	448	1,341	1,789	1.62	4.86	6.48
Scotland: Glasgow	14,582	25	167	192	.17	1.15	1.32
Germany:							
Berlin	13,003	139	593	732	1.69	4.56	6.25
Bremen	6,206	29	177	206	.47	2.85	3.32
Cologne	13,418	60	543	603	.45	4.05	4.50
Hamburg	6,040	28	14	42	.46	.23	.69
Stuttgart	16,107	90	496	586	.59	3.08	3.64
Total	54,774	346	1,823	2,169	.63	3.33	3.96
Holland: Rotterdam	2,253	17	36	53	.75	1.59	2.34
Poland: Warsaw	10,389	462	241	703	4.44	2.32	6.76
Denmark: Copenhagen	3.092	6	59	65	.19	1.90	2.09
Norway:							
Bergen	2,335	2	22	24	.08	.94	1.02
Oslo	4,662	36	69	105	.77	1.48	2.25
Total	6,997	38	91	129	.54	1.84	2.38
Sweden:							
Goteborg	4,618	19	298	317	.41	6.45	6.86
Stockholm	3,435	23	40	63	.67	1.16	1.83
Total	8,053	42	338	380	.52	4.19	5.71
Grand total	148,539	1,496	5,084	6,580	1.01	3.42	4.43

The variation in the percentages of the total examined who were refused visas on medical grounds was much less for class A than for class B defects. The very high percentage of class A refusals at Warsaw, 4.44 per cent, represents unusual conditions not obtaining elsewhere. The comparatively low percentage of refusals for class B disabilities at Warsaw—2.32 per cent—is very possibly due to the large number of nonquota applicants, representing 50.62 per cent of the total examined, who as a class are more likely to be admitted under bond, because this class is largely composed of the wives and unmarried children under 18 years of age of immigrant citizens of the United States.

Of the total number of applicants notified for mental and physical disabilities, approximately one-half were refused visas, an increase of about 6 per cent over the preceding year.

Number and percentage of the total notified in each class of disability who were refused visas on medical grounds

Country and consular office	Number of applicants notified for—			Number of applicants refused visas for—			Percentage of applicants notified who were refused visas for—		
	Class A conditions	Class B conditions	All conditions A and B	Class A conditions	Class B conditions	All conditions A and B	Class A conditions	Class B conditions	All conditions A and B
Belgium: Antwerp	25	160	185	24	24	48	96.00	15.00	25.95
England:									
Liverpool	34	1,082	1,116	34	639	673	100.00	59.06	60.30
London	19	285	304	19	67	86	100.00	23.50	28.65
Southampton	19	333	352	19	58	77	100.00	17.41	21.87
Total	72	1,700	1,772	72	764	836	100.00	44.94	47.17
Ireland: Belfast	16	306	322	16	200	216	100.00	65.36	67.07
Irish Free State:									
Cobh	89	1,525	1,614	88	777	865	98.88	50.95	53.59
Dublin	360	826	1,186	360	564	924	100.00	68.25	77.90
Total	449	2,351	2,800	448	1,341	1,789	99.77	57.04	63.89
Scotland: Glasgow	25	767	792	25	167	192	100.00	21.77	21.21
Germany:									
Berlin	139	1,036	1,175	139	593	732	100.00	57.24	62.30
Bremen	29	343	372	29	177	206	100.00	51.75	55.38
Cologne	60	923	983	60	543	603	100.00	58.83	61.34
Hamburg	28	227	255	28	14	42	100.00	6.17	16.48
Stuttgart	90	834	924	90	496	586	100.00	59.45	63.43
Total	346	3,363	3,709	346	1,823	2,169	100.00	53.91	58.48
Holland: Rotterdam	19	191	210	17	36	53	90.00	18.85	25.15
Poland: Warsaw	463	1,087	1,550	462	241	703	99.78	22.17	45.34
Denmark: Copenhagen	6	117	123	6	59	65	100.00	50.00	52.88
Norway:									
Bergen	2	118	120	2	22	24	100.00	18.64	20.30
Oslo	36	313	349	36	69	105	100.00	22.04	30.05
Total	38	431	469	38	91	129	100.00	21.11	27.50
Sweden:									
Goteborg	20	881	901	19	298	317	95.00	33.82	35.55
Stockholm	23	131	154	23	40	63	100.00	30.53	40.96
Total	43	1,012	1,055	42	338	380	97.67	33.40	36.00
All countries	1,502	11,485	12,987	1,496	5,084	6,580	99.60	44.26	50.67

On referring to the last table it is seen that practically all applicants who were notified for class A conditions, and 44 out of every 100 who were notified for disabilities liable to affect the earning capacity were refused visas.

Comparative data on quota and nonquota applicants.—In view of the agitation for the extension of the nonquota classification to include the kin other than those now nominated by statute, it seemed advisable to study the mental and physical status of the two classes of immigrants separately, from the standpoint of (*a*) the frequency of disabilities and (*b*) the final disposition of notified cases. The analytical results of this study are based on data collected during the last eight months of the fiscal year, and may be considered representative.

During the period November 1, 1926, to June 30, 1927, a total of 82,255 quota and 8,972 nonquota applicants for immigration visas were given careful mental and physical examinations. Of these numbers, 7,304, or 8.87 per cent, of the total quota applicants examined, and 990, or 11.02 per cent, of the nonquota applicants were found to have certifiable disabilities. In other words, certifiable disabilities were found most frequently among the nonquota applicants. This is true of both classes of defects.

Number and percentage of quota applicants examined who were notified for different classes of disabilities, from November 1, 1926, to June 30, 1927

Country and consular office	Number examined	Notified					
		Number			Per cent		
		Class A	Class B	Total	Class A	Class B	Total
Belgium: Antwerp	533	6	80	86	1.12	15.00	16.12
England:							
Liverpool	3,657	18	506	524	.49	13.59	14.08
London	2,723	9	158	167	.33	5.80	6.13
Southampton	1,533	10	136	146	.65	8.85	9.50
Total	7,913	37	800	837	.46	10.11	10.57
Irish Free State:							
Cobh	5,724	59	733	792	1.03	12.63	13.66
Dublin	10,154	249	556	805	2.45	5.47	7.92
Total	15,878	308	1,289	1,597	1.93	8.11	10.04
North of Ireland: Belfast	2,270	13	151	164	.57	6.65	7.22
Scotland: Glasgow	8,184	15	529	544	.18	6.46	6.64
Germany:							
Berlin	7,060	106	737	843	1.50	10.43	11.93
Bremen	3,639	17	197	214	.47	5.41	5.88
Cologne	8,097	35	596	631	.43	7.36	7.79
Hamburg	3,441	14	129	143	.42	3.74	4.36
Stuttgart	9,750	65	485	550	.66	4.97	5.63
Total	31,987	237	2,144	2,381	.74	6.70	7.44
Holland: Rotterdam	1,129	14	73	87	1.24	6.49	7.70
Poland: Warsaw	3,372	166	474	640	4.92	14.05	18.97
Denmark: Copenhagen	1,563	4	48	52	.26	3.07	3.33
Norway:							
Bergen	1,429	1	51	52	.07	3.56	3.63
Oslo	2,440	25	160	185	1.02	6.56	7.58
Total	3,869	26	211	237	.67	5.45	6.12
Sweden:							
Goteborg	3,088	14	561	575	.45	18.16	18.61
Stockholm	2,469	17	88	105	.69	3.56	4.25
Total	5,557	31	649	680	.55	11.66	12.21
Grand total	82,255	857	6,447	7,304	1.04	7.83	8.87

Number and percentage of nonquota applicants for immigration visas who were notified for different classes of disabilities from November 1, 1926, to June 30, 1927

Country and consular office	Number examined	Notified					
		Number			Per cent		
		Class A	Class B	Total	Class A	Class B	Total
Belgium: Antwerp	221	5	32	37	2.26	14.48	16.74
England:							
Liverpool	412	4	58	62	0.97	14.08	18.05
London	696	0	18	18	0	2.58	2.58
Southampton	161	2	23	25	1.24	14.28	15.52
Total	1,269	6	99	105	.46	7.80	8.20
Irish Free State:							
Cobh	120	3	18	21	2.50	17.50	18.00
Dublin	157	2	11	13	1.27	7.00	8.27
Total	277	5	29	34	1.80	10.47	12.27
North of Ireland: Belfast	136	0	21	21	0	15.44	15.44
Scotland: Glasgow	689	0	33	33	0	4.79	4.79
Germany:							
Berlin	248	1	17	18	.40	6.85	7.25
Bremen	145	0	7	7	0	4.83	4.83
Cologne	196	4	8	12	2.04	4.08	6.12
Hamburg	190	1	11	12	.52	5.29	5.81
Stuttgart	191	3	11	14	1.52	5.75	7.27
Total	970	9	54	63	.93	5.57	6.50
Holland: Rotterdam	148	3	16	19	2.03	10.81	12.84
Poland: Warsaw	4,395	221	359	580	5.02	8.23	13.25
Denmark: Copenhagen	270	2	12	14	.74	4.44	5.18
Norway:							
Bergen	84	0	2	2	0	2.38	2.38
Oslo	239	3	26	29	1.25	10.87	12.12
Total	323	3	28	31	.93	8.67	9.60
Sweden:							
Goteborg	205	1	39	40	.48	19.02	19.50
Stockholm	89	1	11	12	1.12	12.36	13.48
Total	294	2	50	52	.67	17.01	17.68
Grand total	8,972	256	734	990	2.85	8.17	11.02

It is of interest to note that the highest percentage of quota applicants with certifiable disabilities was observed in Poland, Belgium, Sweden, England, and the Irish Free State, in the order named, while the frequency of the nonquota applicants with certifiable conditions was greatest in Sweden, Belgium, northern Ireland, Poland, and the Irish Free State, in the order given.

Number and percentage of the total examined refused visas.—Many factors are necessarily taken into consideration by consular and immigration officers in determining the eligibility of an immigrant to admission to the United States. Of the 82,255 quota applicants examined, 3,915, or 4.76 per cent, and of the 8,972 nonquota applicants, 349, or 3.89 per cent, were refused visas on medical grounds.

Number and percentage of total quota applicants examined who were refused visas on medical notification for different classes of disabilities, from November 1, 1926, to June 30, 1927

Country and consular office	Number examined	Refused visas					
		Number			Per cent		
		Class A	Class B	Total	Class A	Class B	Total
Belgium: Antwerp	533	6	16	22	1.12	3.00	4.12
England:							
Liverpool	3,657	18	343	361	.49	9.93	10.42
London	2,723	9	22	31	.33	.81	1.14
Southampton	1,533	10	29	39	.65	1.24	1.89
Total	7,913	37	394	431	.46	4.09	4.55
Irish Free State:							
Cobh	5,724	59	446	505	1.03	7.79	8.82
Dublin	10,154	248	400	648	2.44	3.94	6.38
Total	15,878	307	846	1,153	1.93	5.32	7.25
North Ireland: Belfast	2,270	13	115	128	.57	5.06	5.63
Scotland: Glasgow	8,184	15	110	125	.18	1.34	1.52
Germany:							
Berlin	7,060	106	427	533	1.50	6.05	7.55
Bremen	3,639	17	109	126	.47	3.00	3.47
Cologne	8,097	35	378	413	.43	4.67	5.10
Hamburg	3,441	14	9	23	.42	.26	.68
Stuttgart	9,750	65	250	315	.66	2.56	3.22
Total	31,987	237	1,173	1,410	.74	3.66	4.40
Holland: Rotterdam	1,129	13	18	31	1.15	1.59	2.74
Poland: Warsaw	3,372	166	80	246	4.92	2.37	7.29
Denmark: Copenhagen	1,563	4	23	27	.26	1.47	1.73
Norway:							
Bergen	1,429	1	6	7	.07	.42	.49
Oslo	2,440	23	43	66	.94	1.76	2.70
Total	3,869	24	49	73	.62	1.26	1.88
Sweden:							
Goteborg	3,088	13	216	229	.41	6.99	7.40
Stockholm	2,469	12	28	40	.48	1.33	1.81
Total	5,557	25	244	269	.45	4.39	4.84
Grand total	82,255	847	3,068	3,915	1.03	3.73	4.76

Number and percentage of the total nonquota applicants examined who were refused visas on medical notification for different classes of disabilities from November 1, 1926, to June 30, 1927

Country and consular office	Number examined	Refused visas					
		Number			Per cent		
		Class A	Class B	Total	Class A	Class B	Total
Belgium: Antwerp	221	5	2	7	2.26	0.90	3.16
England:							
Liverpool	412	4	8	12	.94	1.94	2.91
London	696	0	1	1	0	.14	.14
Southampton	161	2	4	6	1.24	2.48	3.72
Total	1,269	6	13	19	.46	1.02	1.48

Number and percentage of the total nonquota applicants examined who were refused visas on medical notification for different classes of disabilities from November 1, 1926, to June 30, 1927—Continued

Country and consular office	Number examined	Refused visas					
		Number			Per cent		
		Class A	Class B	Total	Class A	Class B	Total
Irish Free State:							
Cobh	120	2	0	2	1.66	0	1.66
Dublin	157	2	1	3	1.27	.63	1.90
Total	277	4	1	5	1.44	.36	1.80
Northern Ireland: Belfast	136	0	8	8	0	5.88	5.88
Scotland: Glasgow	689	0	1	1	0	.14	.14
Germany:							
Berlin	248	1	2	3	.40	.80	1.20
Bremen	145	0	1	1	0	.69	.69
Cologne	196	4	1	5	2.04	.51	2.55
Hamburg	190	1	0	1	.52	0	.52
Stuttgart	191	3	3	6	1.52	1.52	3.04
Total	970	9	7	16	.93	.72	1.65
Holland: Rotterdam	148	3	0	3	2.03	0	2.03
Poland: Warsaw	4,395	220	62	282	5.00	1.41	6.41
Denmark: Copenhagen	270	2	0	2	74	0	.74
Norway:							
Bergen	84	0	0	0	0	0	0
Oslo	239	3	0	3	1.25	0	1.25
Total	323	3	0	3	.93	0	0.93
Sweden:							
Goteborg	205	0	2	2	0	.97	.97
Stockholm	89	1	0	1	.11	0	.11
Total	294	1	2	2	.34	.67	1.01
Grand total	8,972	253	96	349	2.82	1.07	3.89

On referring to the last two tables it will be observed that not only does the percentage of refusals vary considerably with the different countries, but also at the different consulates within the same country, as in England and Germany, particularly in the case of quota applicants. The percentage of nonquota applicants who were refused visas is reasonably comparable and considerably less than that of the quota applicants in all countries with the exception of Poland and Northern Ireland.

The percentage of applicants notified for disabilities who were refused visas.—Probably the best indication of the significance attached to physical disabilities by the reviewing officers is the percentage of notified cases who are refused visas on medical grounds. Of 7,304 quota applicants and 990 nonquota applicants notified for mental and physical disabilities, respectively, 3,915, or 53.6 per cent, of the former and 349, or 35.25 per cent, of the latter were refused visas.

Percentage of the total quota persons notified for each class of disability who were refused visas on medical grounds, from November 1, 1926, to June 30, 1927

Country and consular office	Notified (number)			Refused visas					
				Number			Per cent of notified		
	Class A	Class B	Total	Class A	Class B	Total	Class A	Class B	Total
Belgium: Antwerp	6	80	86	6	16	22	100.00	20.00	25.58
England:									
Liverpool	18	506	524	18	343	361	100.00	67.78	68.89
London	9	158	167	9	22	31	100.00	13.92	18.56
Southampton	10	136	146	10	29	39	100.00	13.23	26.71
Total	37	800	837	37	394	431	100.00	49.25	51.49
Irish Free State:									
Cobh	59	733	792	59	446	505	100.00	60.84	63.63
Dublin	249	556	805	248	400	648	96.55	71.92	84.97
Total	308	1,289	1,597	307	846	1,153	99.67	65.63	72.20
North Ireland: Belfast	13	151	164	13	115	128	100.00	76.15	78.04
Scotland: Glasgow	15	529	544	15	110	125	100.00	20.79	22.97
Germany:									
Berlin	106	737	843	106	427	533	100.00	57.90	63.22
Bremen	17	197	214	17	109	126	100.00	55.33	58.87
Cologne	35	596	631	35	378	413	100.00	63.42	65.45
Hamburg	14	129	143	14	9	23	100.00	7.00	16.08
Stuttgart	65	485	550	65	250	315	100.00	51.52	57.27
Total	237	2,144	2,381	237	1,173	1,410	100.00	54.71	61.74
Holland: Rotterdam	14	73	87	13	18	31	92.85	24.66	35.63
Poland: Warsaw	166	474	640	166	80	246	100.00	16.87	38.41
Denmark: Copenhagen	4	48	52	4	23	27	100.00	47.91	51.92
Norway:									
Bergen	1	51	52	1	6	7	100.00	11.76	13.46
Oslo	25	160	185	23	43	66	92.00	26.88	35.67
Total	26	211	237	24	49	73	92.31	23.22	30.80
Sweden:									
Goteborg	14	561	575	13	216	229	92.80	38.50	39.82
Stockholm	17	88	105	12	28	40	70.59	31.81	38.10
Total	31	649	680	25	244	269	80.64	37.59	39.54
Grand total	857	6,447	7,304	847	3,068	3,915	98.83	47.59	53.60

Number and percentage of total nonquota applicants notified for each class of disability who were refused visas on medical grounds from November 1, 1926, to June 30, 1927

Country and consular office	Notified			Refused visas					
	Number			Number			Per cent of notified		
	Class A	Class B	Total	Class A	Class B	Total	Class A	Class B	Total
Belgium: Antwerp	5	32	37	5	2	7	100.00	6.25	18.89
England:									
Liverpool	4	58	62	4	8	12	100.00	13.79	19.35
London	0	18	18	0	1	1	0	5.55	5.55
Southampton	2	23	25	2	4	6	100.00	17.39	24.00
Total	6	99	105	6	13	19	100.00	13.13	18.09

Number and percentage of total nonquota applicants notified for each class of disability who were refused visas on medical grounds from November 1, 1926, to June 30, 1927—Continued

Country and consular office	Notified			Refused visas					
	Number			Number			Per cent of notified		
	Class A	Class B	Total	Class A	Class B	Total	Class A	Class B	Total
Irish Free State:									
Cobh	3	18	21	2	0	2	66.66	0	9.52
Dublin	2	11	13	2	1	3	100.00	9.09	23.07
Total	5	29	34	4	1	5	80.00	3.45	14.70
North of Ireland: Belfast	0	21	21	0	8	8	0	38.09	38.09
Scotland: Glasgow	0	33	33	0	1	1	0	3.03	3.03
Germany:									
Berlin	1	17	18	1	2	3	100.00	11.76	16.66
Bremen	0	7	7	0	1	1	0	14.28	14.28
Cologne	4	8	12	4	1	5	100.00	12.50	41.66
Hamburg	1	11	12	1	0	1	100.00	0	8.33
Stuttgart	3	11	14	3	3	6	100.00	27.27	42.85
Total	9	54	63	9	7	16	100.00	13.00	25.40
Holland: Rotterdam	3	16	19	3	0	3	100.00	0	15.39
Poland: Warsaw	221	359	580	220	62	282	99.55	17.27	48.62
Denmark: Copenhagen	2	12	14	2	0	2	100.00	0	14.30
Norway:									
Bergen	0	2	2	0	0	0	0	0	0
Oslo	3	26	29	3	0	3	100.00	0	10.34
Total	3	28	31	3	0	3	100.00	0	9.68
Sweden:									
Goteborg	1	39	40	0	2	2	0	5.13	5.00
Stockholm	1	11	12	1	0	1	100.00	0	8.33
Total	2	50	52	1	2	3	50.00	4.00	5.77
Grand total	256	734	990	253	96	349	98.83	13.10	35.25

On referring to the last two tables there will be observed that of those refused visas there was a markedly smaller percentage of nonquota applicants notified for class B conditions than of the quota applicants, 13.10 per cent and 47.59 per cent, respectively, despite the fact that a higher percentage of nonquota applicants (8.17 per cent) than of quota applicants (7.83 per cent) was found to have class B disabilities. This difference is in great measure due to the large number of minors, children of naturalized citizens included in this group who are permitted to enter under bond.

Number and percentage of applicants refused visas on medical grounds, according to sex.—Of 7,304 quota applicants for immigration visas notified for mental and physical disabilities during the period November 1, 1926, to June 30, 1927, 4,054, or 55.5 per cent of the total notified, were males, and 3,250, or 44.5 per cent, were females. Of 990 nonquota applicants notified during this same period, 361, or 36.46 per cent of the total notified, were males, and 529, or 63.54 per cent, were females.

Number of quota applicants notified, and the number and percentage of those notified of each sex, who were refused visas for medical reasons, from November 1, 1926, to June 30, 1927

Country and consular office	Notified			Notified and refused visa					
	Number			Number			Per cent		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Belgium	57	28	85	20	2	22	35.09	7.14	25.88
England	384	453	837	229	202	431	59.63	44.59	51.49
Scotland	346	198	544	92	33	125	26.59	16.66	22.97
North of Ireland	84	80	164	75	53	128	89.28	66.25	78.04
Irish Free State	832	765	1,597	667	486	1,153	80,16	63.51	72.20
Germany	1,369	1,012	2,381	643	767	1,410	46.96	75.79	59.22
Holland	42	45	87	13	18	31	30.95	40.00	35.63
Poland	295	345	640	126	120	246	42.71	34.78	38.44
Denmark	35	17	52	25	2	27	71.43	11.76	51.92
Norway	126	111	237	44	29	73	34.84	26.12	30.02
Sweden	484	196	680	214	55	269	44.21	28.06	39.56
All countries	4,054	3,250	7,304	2,146	1,767	3,915	52.98	54.37	53.60

Number of nonquota applicants notified, and the number and percentage of those notified of each sex, who were refused visas for medical reasons, from November 1, 1926, to June 30, 1927

Country and consular office	Notified			Notified and refused visas					
	Number			Number			Per cent		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Belgium	21	17	38	5	2	7	23.81	12.12	18.42
England	48	57	105	11	8	19	22.92	14.03	18.10
Scotland	22	11	33	0	1	1	0	9.09	3.03
North of Ireland	8	13	21	4	4	8	50.00	30.77	38.10
Irish Free State	12	22	34	2	3	5	16.66	13.63	14.70
Germany	34	29	63	6	10	16	17.65	34.48	25.40
Holland	15	4	19	3	0	3	20.00	0	15.78
Poland	237	343	580	109	173	282	46.00	50.43	48.62
Denmark	10	4	14	2	0	2	20.00	0	14.28
Norway	17	14	31	3	0	3	17.65	0	9.70
Sweden	37	15	52	3	0	3	8.11	0	5.77
All countries	361	529	990	148	201	349	41.00	38.00	35.25

In comparing the number and percentage of each sex in the two classes of immigrants who were refused visas on medical grounds, it will be observed the 52.98 per cent of the males notified and 54.37 per cent of the females, or 53.60 per cent of both sexes, notified in the quota class were refused visas. On the other hand, but 41 per cent of the males notified and 30 per cent of the females, or 35.25 per cent of both sexes, notified in the nonquota class were rejected on medical grounds. It is of interest to note that the percentage of rejections of the males and of the females is readily comparable, one with the other, in both the quota and nonquota groups, but that these percentages are constantly lower for both sexes in the nonquota group. These percentages refer to all classes of conditions.

Comparison of results obtained during the fiscal years 1926–27.—Changes in the character of immigration, the efficiency of the work, and the maintenance of standards may probably best be measured by comparing the results obtained at two consecutive periods of time. Of a total of 59,052 applicants for visas medically examined during the fiscal year 1926, 12.73 per cent were found to have certifiable mental or physical disabilities and 5.05 per cent were refused visas. During the fiscal year 1927, of 148,539 applicants medically examined but 8.75 per cent were notified for disabilities and 4.43 per cent refused visas. The difference was brought about by the change in the character of immigration due to the extension of the new system of medical examinations to other countries during the last fiscal year. However, if the applicants deferred for treatment or corrections of physical disabilities during the fiscal year 1927 were counted as notified, the percentage of the total examined notified for disabilities during the year would be 12.58 instead of 8.75.

A more equable comparison is that of results obtained in the same geographic areas, as shown in the following table:

Comparative results of medical examinations of applicants for immigration visas during the fiscal years 1926 and 1927

	Belgium and Holland		England, Scotland and Northern Ireland		Irish Free State	
	1925–26	1926–27	1925–26	1926–27	1925–26	1926–27
Total number examined	867	3,501	33,934	34,178	24,251	27,555
Total number notified, class A	10	44	131	113	693	449
Total number notified, class B	93	351	3,154	2,773	3,086	2,351
Total number notified	103	395	3,285	2,886	3,779	2,800
Per cent of the total examined who were notified:						
Class A	1.15	1.25	0.39	0.33	2.85	1.63
Class B	10.73	10.03	9.29	8.11	12.72	8.53
Total	11.88	11.28	9.68	8.44	15.57	10.16
Total number refused visas, class A	10	41	131	113	693	448
Total number refused visas, class B	47	60	1,322	1,131	972	1,341
Total number refused visas	57	101	1,453	1,244	1,665	1,789
Per cent of the total examined who were refused visas:						
Class A	1.15	1.17	0.38	0.33	2.85	1.63
Class B	5.42	1.71	3.89	3.31	4.00	4.50
Total	6.57	2.88	4.22	3.64	6.86	6.13
Per cent of the total notified who were refused visas:						
Class A	9.70	10.32	3.98	3.91	18.37	16.00
Class B	45.64	15.19	40.86	39.19	25.68	47.89
Total	55.34	25.51	44.84	43.10	44.05	63.89

An analysis of the data in the table shows a remarkable uniformity of notification. The slight decrease in the percentage notified during the year 1927 can only be interpreted as indicating improvement in the type of applicants, as a reflection of the educational effect of the experience of the previous year, and a result of the increased number referred for the correction of remediable defects.

With the exception of Belgium and Holland there is a similar uniformity of percentage of the total examined and the total notified in these areas who were refused visas. The numbers involved in Belgium and Holland during the first period are too small for accurate comparison. On the other hand, the increased percentage of the total notified in the Irish Free State who were refused visas is a striking indication of the continued high standard of eligibility for admission maintained by the reviewing officers of the Consular Service.

Deferred cases.—The humanitarian aspect of the medical examination of applicants for immigration visas in the countries of origin is convincingly illustrated by the results of the practice of deferring decision in the case of applicants with remediable physical disabilities, pending the result of medical or surgical treatment. This is a matter of great importance to the individual applicant, because, otherwise, he would lose his position in the file of applicants and be required once more to wait his turn for one or more years, at least in some countries where the number of applicants is greatly in excess of the annual quota allotment. Furthermore, by having his physical disabilities corrected, the applicant increases to that extent his chance of securing a visa, obviates the necessity of applying for admission under bond, and saves a large measure of annoyance, anxiety, delay, and expense at the port of arrival. The results of this procedure are shown, by country of origin, in the following table:

Number of applicants on whom decision was deferred, pending treatment, and final disposition of cases

Country and consulate	Total number examined	Total number deferred	Per cent deferred of total examined	Results obtained from treatment		
				Number passed	Number rejected or failing to return	Per cent deferred who were passed
Belgium	1, 248	14	1. 12	9	5	64. 28
England	14, 369	284	1. 90	164	120	15. 75
Scotland	14, 582	72	. 49	51	21	70. 83
North of Ireland	3, 973	125	3. 15	96	29	76. 80
Irish Free State	27, 555	3, 061	11. 08	1, 696	1, 365	55. 40
Germany [1]	48, 734	600	1. 23	537	63	89. 50
Holland	2, 253	22	. 97	19	3	86. 36
Poland	14, 383	665	6. 40	541	124	81. 35
Denmark	2, 720	79	2. 90	65	14	82. 27
Norway	6, 997	125	1. 78	64	61	51. 20
Sweden	8, 053	646	8. 20	640	6	99. 07
All countries, total	148, 539	5, 693	3. 83	3, 882	1, 811	68. 18

[1] Hamburg not included in total for country.

Of a total of 148,539 applicants of all countries medically examined, 5,693, or 3.83 per cent, were deferred for the correction of remediable physical disabilities, as compared with 7.74 per cent of the total examined who were notified for nonremediable class B conditions. Moreover, of the total number deferred, 3,882, or 68.18 per cent, were successfully treated and granted visas. The major portion of the remainder failed to return for reexamination.

Mention is made of the distressingly large number of potential immigrants from certain districts who were found on medical examination to have septic mouth conditions and who were given opportunity to have corrections made. (See the following table.) In view of the potential danger of septic foci to health, and even life itself, the beneficial effect on individual health and happiness, and the educational value of these corrective measures from the standpoint of personal hygiene, can scarcely be overestimated. In fact, applicants for visas are now appearing in increasingly large numbers with hampering disabilities recently corrected or removed.

Principal defects notified.—The protection given to the country by these medical examinations is indicated not alone by the number of persons notified as having mental and physical defects and the number refused visas on medical grounds, but also, in very large measure, by the character of the disability—whether it is a condition that may affect the earning capacity, a menace to the health of other persons coming in contact—or a mental taint that may be handed down to future generations. A list of the more important disabilities notified is given in the table which follows:

Number and character of the more serious disabilities notified

Nature of defect	Belgium	England	Scotland	North Ireland	Irish Free State	Germany	Holland	Denmark	Norway	Sweden	Poland	Total
Cardiac disease	6	158	35	22	140	541	7	26	39	74	215	1,263
Defective vision	59	551	136	19	991	961	80	39	176	172	26	3,210
Deformities	0	64	0	0	232	248	6	17	48	0	105	720
Dental sepsis	9	0	0	16	504	42	0	6	23	677	553	1,830
Epilepsy	0	2	0	2	2	0	0	0	0	0	1	7
Favus	1	0	0	1	0	0	2	0	0	0	0	4
Feeble-mindedness	0	10	1	2	18	100	8	1	0	10	91	241
Hernia, all forms	16	140	67	20	110	159	0	13	27	32	164	748
Imbecility	0	5	0	0	1	3	0	0	0	1	3	13
Insanity	0	1	0	0	3	5	0	1	5	0	2	17
Loathsome contagious diseases	0	6	0	5	138	16	0	2	1	2	61	231
Mentally defective	1	9	14	3	196	110	0	4	5	8	140	490
Psychopathic inferiority	0	8	1	0	33	22	0	2	0	3	6	75
Trachoma	25	7	0	1	15	16	0	0	0	2	133	199
Tuberculosis, pulmonary	2	17	3	1	29	31	4	0	6	4	16	113
Tuberculosis, other forms	2	2	6	2	10	5	0	0	4	1	6	38
Varicose veins	9	76	107	13	237	274	0	26	22	90	91	945
Venereal disease	0	10	0	0	2	38	1	0	13	13	4	81

Of vast importance is the number of mental defects recorded, because the harmful effects of such defects do not necessarily cease with the death of the individual, but may pass on to succeeding generations. On consulting the above table it is seen that 843 applicants were found to have mental defects, or 57 out of every 10,000 applicants examined, all of whom were refused visas.

Attitude of individual immigrants and of the general public toward the medical examinations.—The reaction of the individual immigrant to the medical examinations under the new system continues to be largely a matter of whether he is granted a visa or not. The average applicant for an immigration visa is largely an opportunist and apparently does not give the matter much thought one way or the other. However, a few of the more intelligent applicants have expressed themselves as pleased with a system that determines in advance their eligibility to be admitted to the United States, and saves them from annoyance and delay at the port of arrival.

The attitude of the general public, reflected by newspaper accounts, is favorable and largely receptive. The total number of immigrants from any one community under the quota law is relatively too small to excite popular interest in the operation of the new system. For the same reason the educational effect of the medical work must necessarily be slight. However, it is noted that after the system has been in operation for some time, applicants referred for medical examination are found in increasing numbers presenting evidence of greater attention to personal hygiene and with remediable defects corrected. This reaction is more individual than popular.

Attitude of the medical profession.—The medical profession of the countries concerned seems to be singularly free from bias with regard to the medical examinations. No outstanding instances of differences of medical opinion have been reported during the year. In every city where issuing consulates are located, staffs of medical consultants have been organized, comprising specialists in internal medicine, nervous and mental diseases, laboratory work and the like, to whom doubtful and potentially controversial cases are referred. Since, under the law, the burden of proof of eligibility is on the applicant, all consultation fees are paid by the immigrant. By special arrangement a minimum fee is charged.

Facilities for medical examinations.—(*a*) Space: By an arrangement with the Department of State, quarters for the conduct of the medical work are provided by the Consular Service. The adequacy of the facilities, particularly from the standpoint of space and arrangement, has not in all cases been satisfactory, due to inability of the consul, in most instances, to acquire, on short notice, additional space for the increased consular work. This deficiency was usually most noticeable at consulates where the new system was first put into effect. However, the Consular Service has manifested a splendid interest in facilitating the work of the technical advisers, and new and more satisfactory quarters have been provided as promptly as funds became available for the purpose. In reply to a recent inquiry, 11 officers stated that the arrangements for the medical service were satisfactory, 5 unsatisfactory, and 4 that new quarters were in preparation. It is believed that a rearrangement of the quarters reported unsatisfactory will be accomplished as soon as funds are available. (*b*) Clerical help: The amount and character of the clerical help furnished could be further improved in some instances. Due and proper representation has been made to the responsible authorities, and it is believed that the services of full-time clerks will be furnished wherever needed by the technical advisers.

Reports From Immigration Stations

NEW YORK, N. Y.

Senior Surg. E. K. Sprague in charge. Post-office and telegraphic address, Ellis Island, N. Y.

Due to the provisions of the immigration act of 1924 and to the extension of the medical examination of intending immigrants abroad in the principal countries of origin by officers of the Public Health Service, conditions at this station have changed materially, both in the scope of the work and in the diseases encountered. The results, however, have proved very satisfactory. Inasmuch as three different services, each in a separate department, are engaged in the work, and, therefore, authority is divided, there are at times difficulties in connection with the examinations. When it is considered that during the entire year only seven cases of mandatorily excludable diseases have been detected among aliens who had previously been examined by officers of the service at ports of embarkation, three of which were acute and had unquestionably appeared after embarkation, it is felt that the detection of diseases at ports of embarkation is very efficient, especially when it is borne in mind that, under the provisions of the law of 1924, an alien has four months in which to embark after having been given the medical examination and issued a visa. It is manifest that many conditions might readily develop during that period. While it is true that aliens are given a reexamination at embarkation, such examinations can, of course, not be as thorough as the examination given at the time the visa is issued, and certain conditions might be overlooked at that time which had developed meanwhile.

Another source of possible difficulty is that forgeries, either of the entire visa or of the initials of the medical officers on the visa, have been detected at this station in several instances. These forgeries were extremely clever and it is entirely possible that others were undetected. This condition might, of course, result in different findings at the port of arrival from those indicated by the forgeries and in a measure account for the slight discrepancy between the medical findings at this station and those of the officers abroad.

Since the inauguration of the examinations abroad the character of diseases and defects found at this station have materially changed. With the exception of a few cases, arriving from ports where medical examinations are not now made, the original detection at this station of class A conditions such as mental defects, tuberculosis, favus, ringworm of the scalp, and trachoma, has become comparatively rare.

There is another side of the problem which, perhaps, should not be overlooked. In certain cases a difference of opinion between examining medical officers can occur, since medicine is not a fixed and definite science in the sense that mathematics is. To meet the requirements of the immigration law as to the detectability of the physical defects and diseases of aliens at the time of foreign embarkation, in order that the Secretary of Labor may exercise his authority in the imposition of fines on steamship lines, a statement of medical opinion covering this question on all class A and B certificates is usually requested. Since the inauguration of the examinations abroad, however, many diseases and physical defects have been detected by the medical examining officers abroad and a memorandum setting forth their findings has accompanied the visa. Upon arrival at the port of New York these aliens on being reexamined were found to be afflicted with the same conditions as notified in the medical memorandum by the officer examining at the port of foreign embarkation. On all such certificates the following statement has been placed: "This alien was given a competent medical examination at the foreign port of embarkation and the condition herein certified was detected at that time."

As stated in an earlier part of this report, a small number of aliens arrive who are found to be afflicted with physical defects or diseases which ordinarily would have been detected immediately before embarkation, but the provisions of the law of 1924, which allows an alien four months in which to embark after he has received his visa, makes it possible for the condition with which he is found to be afflicted upon arrival to have developed during that interval. In all such cases, the following statement is placed on their certificate: "This alien was given a competent medical examination at the foreign port of embarkation and the condition herein certified was not detected at that time."

For the fiscal year 1927 there has been a distinct reduction in the number of aliens coming to Ellis Island for intensive examination. The total for the year was 39,928, whereas for the previous year it was 72,665, a decrease of 32,737. This lessening of the line work has led to a curtailment of the number of officers engaged in the examination from 8 to the present force of 3 full time and 1 part time.

While the intensive examinations at Ellis Island have been reduced, the boarding work and its importance has increased. In addition to the examination of all arriving aliens in all classes, it has devolved upon these officers, during the past year, also to examine over 500,000 alien seamen. It not infrequently happened that an entire day was thus consumed aboard an individual ship, because the seamen can not be examined until after the vessel has docked and the work with alien passengers finished. There were eight officers detailed for the boarding work, but this number was insufficient to meet the demands for the first days of the week, when the largest number of passenger boats usually arrive from foreign ports. To meet the situation it was necessary to detail officers from the hospital and occasionally the number has been as high as four. The scheme of utilizing hospital officers for boarding work in an emergency has its objections, one of which is that the days on which they are so absent are also those days on which there is the greatest number of admissions to the hospital. Another objection is that the same officers can not be regularly spared for assisting in boarding, with the result that medical officers experienced in boarding work are not always available; however, this so far is the only solution reached of the difficulty arising from the shortage of medical officers regularly detailed for immigration work at the stations.

BOSTON, MASS.

Acting Asst. Surg. A. J. Nute in charge. Post-office and telegraphic address, 287 Marginal Street, East Boston, Mass.

Thirteen steamship lines maintain regular passenger service to Boston from foreign ports. One line from Canadian ports presented only Chinese passengers, all others having been passed for entry at Canadian embarkation points. One thousand one hundred ninety-one vessels were boarded for inspection purposes during the fiscal year, of which 317 were passenger carriers. In addition, the medical officer at this station made various trips to the ports of Beverly, Lynn, Salem, Plymouth, Quincy, and Weymouth, in order to inspect seamen for the prevention and control of disease in accordance with immigration law.

Boston receives most of its aliens from the British Islands, northwestern Europe, Canada, and Newfoundland. Small numbers filtered in from tropical America and a small but steady traffic of Chinese via Yarmouth, Nova Scotia. The majority of those arriving for the purpose of permanent residence were young adults who claimed a knowledge of skilled trades or were unskilled country laborers.

Since the advent of foreign medical inspection a steady improvement has been noted in the physical and mental condition of arriving aliens bearing visas approved by service officers abroad. The condition of the regular third class as regards general cleanliness was very good and but a small number of serious defects was noted. The second-class visa holders also disclosed few marked defects that had not been previously recorded and considered. The so-called return permit holders in both classes, temporary visitors, and tourist third-class aliens presented the larger number of class B certificates.

Under the present system all aliens are inspected, conditions permitting, at whatever hour a ship docks. With few exceptions trans-Atlantic liners clear for New York as soon as possible after the Boston passengers have been placed on the pier.

Working schedules at this port have to be very elastic. Sundays and holidays are unusually busy days with passenger traffic. New laws, court decisions, and changes in local commercial development constantly present new medical problems and adjustments that have to be met and cared for. Boarding of ships begins at 7 a. m., standard time, in the summer, and 8 a. m. in the winter months. The completion of a day's boarding may be as late as 10 p. m.

Boston, being a port of entry for Chinese, had 132 Chinese applicants for admission during the fiscal year. This traffic came from the Province of Kwantung, South China, embarked at Hong Kong, debarked at Vancouver and Victoria, B. C., traveled by rail to Yarmouth, Nova Scotia, and thence continued by way of the Yarmouth Line to Boston. Upon examination, polyparasitism was the common finding; only 22 were found to be negative of all ova on microscopical examination. Round and whip worm eggs predominated, next came hookworm, and last, *Clonorchis sinensis*. None of these aliens showed physical symptoms of infection. The decrease in number is ascribed to rigid enforcement of the law at this port and to the fact that practically all applicants are examined on shore under the same conditions.

As a general rule no attempt is made to examine any passenger on board ship. Saloon passengers and, under certain conditions, certain cabin passengers, are inspected on shipboard, but any intensive examinations necessary in order to state beyond reasonable doubt that the alien is free from disease or to confirm any suspicious symptoms are made on shore, either on the pier, at the detention station, or at an appropriate hospital where the details can be carried out under the supervision of a service officer.

ABERDEEN, WASH.

Acting Asst. Surg. J. B. Kinne in charge. Post-office and telegraphic address, Aberdeen, Wash.

Because of the fact that the foreign ships entering this port are cargo vessels exclusively the Immigration Service is seldom called upon to examine immigrant passengers, but six stowaways being examined during the past fiscal year.

BALTIMORE, MD.

Surg. John W. Trask in charge. Post-office and telegraphic address, Baltimore, Md.

During the fiscal year no regular passenger-line vessels entered the port of Baltimore. A few passengers came in on cargo vessels. One thousand four hundred and five vessels subject to immigration inspection were boarded at this port during the year, having a total of 80 alien passengers, and 105 stowaways and 44,567 alien seamen who were subjected to medical examinations.

CALEXICO, CALIF.

Acting Asst. Surg. A. L. Rice in charge. Post-office and telegraphic address, Calexico, Calif.

The conditions concerning class, number, and nationality of immigrants at this place have changed and enlarged to a considerable degree during the past fiscal year. Due to the efforts of the immigration officials at this port and added activities of the border patrol, the number of examinations has increased over 300 per cent. The largest percentage is Mexican nationals, and a great many Chinese and Japanese are passing through this port in transit to other points in Mexico and Asia. Many Canadians residing in southern California are appearing at Calexico for permanent entrance to the United States. There have been a few quota country emigrants passing through this port also. The general health conditions have been very satisfactory during the year.

CHARLESTON, S. C.

Surg. J. H. Oakley in charge. Post-office and telegraphic address, Charleston, S. C.

The medical inspection of aliens is performed aboard the vessel immediately after the quarantine inspection of the vessel is completed, the same medical officer having charge of both operations. During the year 17 alien stowaways were examined. They were on vessels from ports in Germany, Belgium, France, Cuba, Colombia, England, and Honduras, and, following examination, were returned to the country from which they came, either on the vessel on which they arrived or some other vessel. No alien passengers other than stowaways entered the port of Charleston during the year. All the immigration work was confined to alien members of the crews of cargo vessels.

EASTPORT, ME.

Acting Asst. Surg. J. E. Brooks in charge. Post-office and telegraphic address, Eastport, Me.

One passenger steamer carrying aliens enters this port every day except Friday, and two vessels arrive on Wednesdays. There is no regular time of arrival, the time depending on the tides. One mail boat enters and leaves every day. This boat carries quite a few passengers, although most of them do not get off here. No record is kept of the ferries engaged in purely local traffic. A large motorboat traffic enters and leaves this port every day. During the summer and fall as many as 300 will come in one day. These boats carry from 2 to 12 or more persons each, most of whom come here to trade, but many also come to take steamers or trains for points farther west.

The immigrants going beyond this port are usually of a good type and most desirable, but those destined for the near-by lumber camps and the fish canneries are usually a less desirable type; many of these do not intend to remain permanently but expect to return to their homes after the working season is over.

EASTPORT, IDAHO

Acting Asst. Surg. A. R. Bailey in charge. Post-office and telegraphic address, Eastport, Idaho.

The port of entry of Eastport, Idaho, is one of the most important border ports on the Canadian border. The Canadian Pacific Railway & Steamship Co., being a world-wide transportation system, and having one of their main border terminals at Kingsgate, British Columbia, opposite Eastport, Idaho, brings many aliens directly from the British Isles and other parts of Europe who are destined to the Pacific Coast States or other points in the western part of the United States. These passengers brought from Europe are transferred from the Canadian Pacific steamships at eastern Canadian seaports to the transcontinental trains of the Canadian Pacific system and delivered to the border at this point. The Canadian Pacific Railway system also ramifies throughout the rich prairie Provinces of western Canada, forming a huge network of branches, and thus furnishes a means of transportation for the farmers and others in the western Provinces who wish to come to the Pacific Coast States as immigrants or for the purpose of spending the winters in the milder climate, as so many of them do each year. Because of the situation of this port and the fact that it is the border terminal of the Canadian Pacific Railway, which is continuous at this point with the Spokane and International Railway, the California winter tourist travel and the immigration of people from Canada to our Western States is heavy through this port.

In addition to the railway passenger business through this port already described, there is a large and fast-growing automobile tourist business, which makes more work for all officers here than the regular train work. The California-Banff-Lake Windermere Road, connecting the national parks of the United States and Canada and starting from southern California, crosses the international border at this port also, and throughout the summer-tourist season and late into the fall there is a constant stream of tourists traveling by automobile, among which are a large number of aliens coming as immigrants or for an indefinite stay who must be manifested by the immigration officers and referred to the assistant surgeon here for medical examination. During the summer and fall months there are probably more immigrants coming into the United States through this port by automobile than by passenger trains.

The office is kept open during the automobile season from 8 o'clock in the morning until 8 in the evening, and every day in the week. This means that the medical officer, as well as the immigration inspectors, must be on duty approximately 12 hours a day and every day in the week, since his services may be needed at any time during the day from 8 in the morning until 8 in the evening. During the past fiscal year there were over 17,000 aliens who applied for admission at this port.

Many of these people are American-born naturalized Canadians who have perhaps homesteaded in Canada, have farmed there for several years or engaged in other business, have acquired a competence, and are returning to the country of their nativity to seek a more suitable climate in the Pacific Coast States to spend their declining years. There are also numerous native-born Canadians and other British subjects who have resided in Canada for various periods of time who emigrate to the United States through this port seeking better living conditions, greater opportunities, or more favorable climate in the Pacific Coast States. There are also many Russians, Greeks, Czechoslavs, and other people of southern or southeastern European origin who have been colonized in western Canada by the Canadian Pacific Transportation Co., and who are constantly seeking admission here into the United States. There is also the problem here of dealing with the old-country immigrants who are unable to secure the necessary quota visas in their native countries to immigrate directly to the United States, and who come to Canada instead, hoping to gain admission into the United States through the border ports from Canada.

EL PASO, TEX.

Surg. J. G. Wilson in charge. Post-office and telegraphic address, El Paso, Tex.

Immigration at the port of El Paso consists mostly of Mexicans. Advantage is taken of the opportunity presented, during the process of delousing in quarantine, for making immigration inspections, and both of these operations are performed at the same time. The Public Health Service officer stationed at this port unofficially cooperates with the United States consul stationed at Juarez, Mexico, which is immediately across the border, by giving advice regarding the physical and mental condition of aliens seeking visas at that consulate. Persons who are obviously feeble-minded and those suffering from physical defects are therefore weeded out without being officially presented for examination.

The discontinuance of one acting assistant surgeon made it necessary to follow a different plan of conducting laboratory examinations. Microscopical examinations for gonococcus, favus, and ringworm are now done in the office of the immigration station by the Public Health Service, and Wassermann examinations are made at the William Beaumont General Hospital by medical officers of the Army. This courtesy extended by the commanding officer of the William Beaumont Hospital has resulted in a substantial saving of public funds without in the least decreasing the efficiency of the laboratory service.

FALL RIVER, MASS.

Acting Asst. Surg. Thomas Cox in charge. Post-office and telegraphic address, 1244 Pleasant Street, Fall River, Mass.

The number of ships arriving at this port during the year was less than that during the preceding fiscal year, due to the fact that most of the oil tankers obtained oil in California instead of Mexico as heretofore. They are now plying between Aruba, Dutch West Indies, and Fall River, and a considerable increase in immigration examinations is expected during the coming year.

GALVESTON, TEX.

Surg. W. H. Slaughter in charge. Post-office and telegraphic address, Galveston, Tex.

Boarding at this port is done in conjunction with a boarding officer of the Immigration Service, utilizing a quarantine-station launch for transportation, thus effecting a material saving to the Immigration Service in the matter of launch hire. This arrangement is highly satisfactory to the Public Health Service in that the immigration status of persons aboard ship is first determined by a duly authorized immigration officer thus avoiding unnecessary medical examinations of nonaliens.

Comparatively few vessels engaged in foreign trade arrive at this station carrying passengers, practically all the vessels being cargo carriers. During the fiscal year a total of 860 vessels engaged in foreign trade were inspected. These vessels carried a total of 21,691 aliens in their crews, and 596 alien passengers applying for admission.

FORT MONROE, VA.

Surg. H. E. Hasseltine in charge. Post-office and telegraphic address, Fort Monroe, Va.

The medical inspection of aliens at this port is confined almost wholly to the inspection of alien seamen. The few passengers inspected are usually on ships calling in port for bunker coal, and their stay in port is of but short duration. Passengers go ashore only during the time the vessel remains in port.

The seamen were of various nationalities. The large influx of ships during the "coal rush" in the first half of the fiscal year brought many southern European alien seamen to the port.

The medical inspection of aliens has been combined with the quarantine inspection, a practice followed at this port for a number of years. Eighty-one vessels not subject to quarantine inspection, carrying 1,996 aliens, have been boarded for the purpose of examining aliens. These vessels are divisible into two classes—(*a*) those plying between United States and Canadian ports and (*b*) those from Pacific coast ports of the United States via the Panama Canal who do not lose their coastwise status from the quarantine standpoint in passing through the canal, but require boarding for immigration examinations.

GLOUCESTER, MASS.

Acting Asst. Surg. E. B. Hallett in charge. Post-office and telegraphic address, 139 Main Street, Gloucester, Mass.

Upon the arrival at this port of a ship on which there is an alien, the medical officer is notified by the immigration inspector and immediately the former boards the ship and makes his immigration examination. The medical inspection of aliens at Gloucester is confined, for the most part, to alien seamen, most of whom come from the British Provinces, but there are a considerable number who come from European ports in the salt ships. The latter require special tests. Many of the alien seamen from the Provinces remain here and embark on local vessels.

This immigration station is in close touch with Boston facilities.

JACKMAN, ME.

Acting Asst. Surg. E. D. Humphreys in charge. Post-office and telegraphic address, Jackman, Me.

The immigration work at this port consists for the most part of the examination of aliens arriving from Canada. A majority of these persons are French farmers, woodsmen, and other laboring classes, although a few aliens of other nationalities arrive here.

The arrangement between the Immigration Service and the Public Health Service officer, by which the immigration inspector notifies the medical officer whenever an alien arrives requiring examination, continued throughout the year and seems to be very satisfactory, as it facilitates the work of both services and is of great convenience to those traveling by highway.

MARCUS, WASH.

Acting Asst. Surg. H. F. Craig in charge. Post-office and telegraphic address, Marcus, Wash.

The large majority of the immigrants examined at this port are Canadian citizens. As there is no detention hospital here, all deportable cases are returned to Canada the same day as rejected.

MOBILE, ALA.

Surg. C. H. Waring in charge. Post-office and telegraphic address, Mobile, Ala.

But very few aliens are admitted through this port, the bulk of the work being confined to the inspection of foreign seamen. The greater number of passengers entering are citizens, a fair proportion of whom are employees of the United Fruit Co. and come in on their vessels. French and Spanish passenger vessels enter occasionally, but their passengers are usually for other ports. These vessels bring in at times from Habana alien passengers, these being natives of Cuba, France, or Spain, and are usually high-type merchants, etc., coming in for short visits or business trips.

MONTREAL, CANADA

Surg. Louis Schwartz in charge. Post-office and telegraphic address, Montreal, Canada.

The Canadians passing through this office seem to be particularly free from trachoma and other loathsome contagious diseases, but there are comparatively many of them suffering with tuberculosis and other diseases of the lungs. The Europeans who pass through here have already been examined by the Canadian immigration authorities before they were allowed to enter Canada, and therefore only a few mandatorily deportable diseases are found among them.

There were examined 21,500 immigrants. This represents only a small portion of the aliens passing through the immigration office, because many are passed by the inspectors without being referred for medical examination. The aliens so passed are usually business men who make periodic trips to the United States.

NACO, ARIZ.

Acting Asst. Surg. B. C. Tarbell in charge. Post-office and telegraphic address, Naco, Ariz.

The aliens encountered at this port are mostly of Mexican extraction, and come from the State of Sonora, Mexico. The Southern Pacific Railroad Co. has just completed its west-coast line into Mexico City, via Naco, Sonora, Mexico, and Nogales, Sonora, Mexico, and down the west coast to the City of Mexico. This opens up a new territory, and aliens coming from the high table-lands near Mexico City, where typhus fever is prevalent the year round, will present new problems to be met by the medical examiners at the various ports of entry along the Arizona-Mexico border.

Six hundred and sixteen vaccinations were performed during the past year. The hours of medical examination at this port are 10 a. m., 2.30 p. m., and 4 p. m.

NOGALES, ARIZ.

Surg. P. J. Gorman in charge. Post-office and telegraphic address, Nogales, Ariz.

The number of immigrants examined at this station during the past fiscal year was 17,075, an increase of 5,881 over the year 1926. This increase is due to the extension of Southern Pacific lines to Guadalajara and Mexico City on March 1, 1927. The average monthly number of immigrants examined since that date is 2,235.

All aliens entering through this port are vaccinated unless they present evidence of recent vaccination or of immunity to smallpox. The total number vaccinated was 8,183. Because of the lack of proper facilities, intensive examinations are not made. Applicants for admission who present an unclean appearance are compelled to bathe before being examined.

It is expected that shortly after the beginning of the next fiscal year the Public Health Service will be occupying a new building fully equipped as a quarantine plant, and affording, incidentally, improved facilities for the medical examination of aliens without increased cost to the Immigration Service.

NOYES, MINN.

Acting Asst. Surg. Frank B. McIntosh in charge. Post-office and telegraphic address, Noyes, Minn.

The port of entry of Noyes is situated on the Canadian border, some 60 miles south of the city of Winnipeg, Manitoba, and is traversed by the Jefferson Highway and lines of the Great Northern and "Soo Line" Railways. Passenger traffic between nearly all of central Canada and the American cities of Minneapolis, St. Paul, and Chicago passes through here.

The class of aliens inspected at this port during the year was largely made up of Canadian-born people seeking entry into the United States. Many of them were of the laboring class desiring to go to the great industrial centers, such as Chicago and Detroit, in the hope of finding employment there. Another group presumably desired admission for the purpose of proceeding to the Mayo Clinic at Rochester, Minn., and other medical centers for medical treatment. It was felt that in a considerable number of these cases the aliens, although presenting some physical abnormality, were simply using this as an excuse to gain entry into the country. A considerable percentage also were newly arrived immigrants into Canada from Europe who apparently came to Canada in the hope of making it a stepping-stone into the United States.

PERTH AMBOY, N. J.

Acting Asst. Surg. C. W. Naulty, jr., in charge. Post-office and telegraphic address, Perth Amboy, N. J.

The medical examination of aliens at this port is confined for the most part to alien seamen, the vessels arriving here being primarily freighters. After certification is made, the cases are removed to Ellis Island, N. Y., for final disposition.

Most of the boats have a long-time charter and are in a "ferry service," running on a regular schedule; and as most of the crews are shipped on in New York or Norfolk, there is not much work from an immigration standpoint.

PORT HURON, MICH.

Acting Asst. Surg. George M. Kesl in charge. Post-office and telegraphic address, Port Huron, Mich.

Aliens entering the United States at this port do so by the Canadian National Railway and by ferries operating on the St. Clair River. Railway trains enter by means of a tunnel below the river, and aliens so entering are examined at the St. Clair Tunnel Depot, situated on the western limits of the city, 2½ miles from the down-town section. The medical examiner visits the immigration office at the St. Clair Tunnel Station regularly once each day and is called at other times when additional aliens await examination. Aliens carried by ferry are examined at the ferry wharf or infrequently are sent to the Federal Building for medical examination. The medical officer does not make regular trips to the wharf, being called by telephone when necessary.

Racially, aliens examined at this port are almost wholly Caucasian. Seventy per cent are natives of Canada, 20 per cent natives of the United Kingdom, and the remainder scattering Europeans.

Ferry automobile travel is constantly increasing. This offers a problem in inspection and medical examination. Unless constant vigilance is maintained aliens suffering with excludable mental and physical disease will gain admission. This is particularly true during holiday travel. During the holiday period, including days immediately preceding and subsequent to the holiday, an average 6,000 automobiles enter the United States.

PORTLAND, OREG.

Acting Asst. Surg. E. A. Weir in charge. Post-office and telegraphic address, Portland, Oreg.

While there is a very large volume of freight business between the Orient and other foreign ports and Portland, there is at this time no direct passenger service to any foreign ports. Consequently there are only a small number of aliens to be inspected, practically all of whom come into the United States from Canada. The type of immigrant encountered here is, therefore, somewhat Americanized before coming in contact with this office.

In addition to his other duties the Public Health Service officer stationed at this port has rendered medical attention, when possible, to aliens ill and afflicted in the city jail.

PRESIDIO, TEX.

Acting Asst. Surg. C. M. Hatcher in charge. Post-office and telegraphic address, Presidio, Tex.

Immigration through this port greatly increased over any other year since the passage of the immigration act of 1924. Since the Kansas City, Mexico & Orient Railroad is being rapidly completed from Chihuahua City, Mexico, to Ojinaga, Mexico, it is believed that immigration through this port will continue to increase.

The general type of immigrant examined at Presidio is of the laboring class, and practically all are Mexicans, most of whom settle here or near by; a very few go into the interior of the United States.

PROVIDENCE, R. I.

Surg. H. G. Ebert in charge. Post-office and telegraphic address, room 403, Federal Building, Providence, R. I.

Alien passengers arriving at this port are brought by one line, the Fabre Line, one or two vessels arriving each month during the past year. The schedule for next year, however, calls for two or three vessels a month. These vessels come from Mediterranean ports, bringing immigrants from Italy, Portugal, Greece, Turkey, Russia, Palestine, Armenia, Rumania, and Egypt, with occasionally a few from north central Europe, who have embarked for some unknown reason at Mediterranean ports. Many of these aliens are returning from visits abroad and are bringing relatives with them. Practically none of them have been previously medically examined by service officers at European consulates.

The general physical and mental condition of arriving aliens seems to have shown a progressive improvement over that found in previous years, each year a slightly higher type being encountered, so that those seen now contrast very favorably with those seen, say, five years ago. Very few class A certificates are now being issued as compared with former years, and those conditions certified as affecting ability to earn a living are apparently of a less serious nature than in previous years; most of these being senility.

PORT TOWNSEND, WASH.

Surg. W. A. Korn in charge. Post-office and telegraphic address, Port Townsend, Wash.

At the Port Townsend Quarantine Station the immigration medical function is an auxiliary of the Seattle office, consisting of a primary medical inspection combined with the quarantine inspection, and is carried out on board ship. Whenever an alien is found suffering from a disease or disability requiring action by the immigration officials a notation is made on the immigration passenger or crew list and a certificate issued. Further appropriate action is then taken on arrival of the vessel at Seattle.

The restrictive legislation which is in force against orientals, who formerly constituted the bulk of the immigration, has reduced the number of immigrants to a small number at this port.

PHILIPPINE ISLANDS

Surg. C. R. Eskey in charge. Post-office and telegraphic address, P. O. Box 424, Customhouse, Manila, P. I.

The United States immigration laws and regulations in a somewhat modified form are in force in the Philippine Islands. The collectors of customs act as immigration officers and are charged with the enforcement of the laws and regulations concerning immigration. The medical examination is made by medical officers of the United States Public Health Service, in addition to their primary duties as quarantine officers and in furnishing medical relief to beneficiaries of the Public Health Service.

Arrangements have been made for the medical inspection of immigrants at all ports where incoming quarantine inspection is performed, with the exception of the two naval stations—Cavite and Olongapo. Practically all immigrants enter through Manila. At Jolo and Zamboango a few immigrants from Singapore and Borneo ports are examined each year. Immigrants destined for Davao are examined at Manila, because practically all vessels carrying immigrants stop at Manila en route to Davao. The medical inspection work was performed on board the arriving vessels or in the quarantine office.

The laboratory work necessitated by the intensive examination of arriving aliens was performed by the service officers during the entire year, no laboratory work in this connection having been referred to the bureau of science. Aliens arrive on practically every passenger vessel, so that immigration inspection is almost continuous.

No facilities exist for the detention and intensive medical inspection of arriving aliens. Plans have been drawn for a proper immigration detention building at Manila, and it is hoped than an appropriation may be obtained from the legislature in the near future to erect such a building.

The following table shows the nationalities represented by the aliens which arrived during the five calendar years named:

Nationality	1920	1922	1924	1925	1926
Chinese	14,875	13,954	12,497	12,207	17,526
Dutch and Flemish	81	73	63	63	46
East Indian	53	81	80	84	118
English	750	519	644	706	701
French	68	75	84	76	55
German	79	67	70	107	153
Irish	12	16	7	11	13
Italian	24	31	24	46	65
Japanese	952	584	768	1,081	2,940
Portuguese	79	43	47	30	45
Russian	70	53	189	58	98
Scandinavian	33	42	71	41	23
Scotch	32	53	19	22	59
Spanish	563	375	403	401	443
Syrian	38	15	15	2	20
Turks	10	15	7	3	2
Other nationalities	133	54	63	138	229
Total	17,852	16,050	15,251	15,076	22,536

RIOGRANDE, TEX.

Acting Asst. Surg. C. J. Martin in charge. Post-office and telegraphic address, Riogrande, Tex.

During the past fiscal year there was an increase in the traffic of all classes of aliens and a decided increase in the number of cases certified for mental or physical defects. The class of aliens inspected at this port and the subport of Roma, Tex., which is under the jurisdiction of the medical officer at Riogrande, are of the Mexican race, and citizens of Mexico and would be considered as the middle or working class. The aliens, however, coming through these two places from the interior points of Mexico would be considered as first-class passengers. The former class, when admitted for permanent residence in the United States, generally locate on the border or within a distance of two to three hundred miles of the border.

The Riogrande city office is located on the banks of the Rio Grande River on the military reservation (Fort Ringgold, Tex.) about 1 mile from the town of Riogrande city. The Mexican port opposite this station is Camargo, Tamaulipas, Mexico, the town being approximately 5 miles from the river. The traffic between these two places is carried on by automobile to and from the two cities, and ferryboats are operated on the river between the two ports, making as many trips per day as is necessary for public transportation. The hours of duty at the port of Riogrande are from 9 a. m. until 4.30 p. m., except Sundays and holidays, on which days the port closes at 12 noon. The medical officer is required to examine all classes of aliens, who are constantly crossing during the open hours during the day, both at Riogrande and Roma.

ROUSES POINT, N. Y.

Acting Asst. Surg. J. L. Remillard in charge. Post-office and telegraphic address, Rouses Point, N. Y.

Rouses Point, situated on the shores of Lake Champlain and approximately 2 miles south of the Canadian boundary line, has been for many years a noted port of entry for legal and illegal traffic, more so of the latter the last few years, owing to the many changes made in the immigration laws.

It is necessary that the medical officer be present on the arrival of all trains in order to examine any alien who might be removed at this port. On numerous occasions, also, he is called during the day to report at the office to examine aliens who have been apprehended on the highways after having gained a surreptitious entry to the United States. Approximately 24 different nationalities are examined at this port in the course of a year; English, Hebrews, and Canadians are the most numerous.

SASABE, ARIZ.

Acting Asst. Surg. J. M. Hardy in charge. Post-office and telegraphic address, Sasabe, Ariz.

This station is located about 1 mile from the Mexican border, 75 miles from Tucson, on the main highway leading from Altar, Sonora, Mexico. The district covered is about one-fourth the area of the State of Sonora, Mexico, being thinly settled, consisting of cattle ranches, small farms, some mining activities, and a few small towns and villages.

The applicants were mostly merchants and ranchers entering to make purchases of supplies and merchandise for their business in Mexico, together with a few who entered for short periods to visit relatives in this country. There were also 40 returning residents of this country who had been in Mexico less than six months.

ST. JOHN, NEW BRUNSWICK

Acting Asst. Surg. D. C. Malcolm in charge. Post-office and telegraphic address, St. John, New Brunswick, Canada.

The port of St. John is open all the year, but most of its operations are carried on during the winter months, from November until April, during which period the ports of Montreal and Quebec are icebound. During this period the steamers of the Canadian Pacific Steamship Co. carry passengers to this port. As a rule these boats arrive late Saturday night or early Sunday morning, and the passengers are landed and inspected. Daily inspection of border cases takes place chiefly in the afternoon and on Saturday mornings, though the medical officer is on call for any time. Occasional cases coming across the Bay of Fundy from Nova Scotia necessitate early evening inspections.

SAN DIEGO, CALIF.

Surg. J. F. Worley in charge. Post-office address, Point Loma, Calif.; telegraphic address, San Diego, Calif.

The immigration activities of the San Diego station are divided into two main groups: First, the medical inspection of aliens at the port of San Diego, and, second, the medical inspection of aliens crossing the border at the port of San Ysidro (formerly Tia Juana).

The principal part of the immigration work at this port is concerned with the inspection of aliens on the vessels arriving from foreign ports. This work is carried on at the quarantine station in connection with quarantine inspection. All suspicious or doubtful cases are gone over a second time, intensively, and are referred to the relief station of the Public Health Service for further observation if necessary.

The Public Health Service officer on duty at this port also makes examinations of aliens taken in custody by the immigration service for deportation proceedings. These examinations are all made at the relief station, and a large proportion are intensive, although very few are certified. Included among them are practically all types and nationalities.

The very small proportion of certifications made during the past fiscal year is explained by the fact that the great majority of aliens, both crew and passengers, arriving at this port, embarked at this or other American ports and developed no cause for certification in the meantime. The passengers are nearly all on intercoastal vessels and represent various types of our own foreign element. A large proportion of the alien seamen are on the same class of vessels, and are of the usual types found on American vessels. Another large proportion of the seamen are the local fishermen who fish in Mexican waters. These are practically all residents of San Diego, although not citizens. The majority are Portuguese, Italians, and Japanese.

Practically all of our large vessels, not intercoastal, are French, German, and Scandinavian, and their crews and occasional passengers are from those countries, with the addition of a few French West Indians. The remaining aliens are principally the Mexican crews of small vessels plying between here and near-by Mexican ports.

The great majority of aliens entering at the port of San Ysidro are Mexicans. The class probably next in number are Russians, seeking temporary permits. There are also considerable numbers of Armenians, Syrians, and Jews. Of Europeans, the Italians predominate, but practically all European countries are represented. There are also numbers of Canadians and Japanese, as well as some Chinese in transit. It is estimated that probably half of those examined are for temporary permits, mostly by those living in Lower California and wishing to visit in the United States. This method, however, is also a favorite one with those intending to remain, but who can not get into the country otherwise on account of quota and other restrictions.

All aliens at the border are given a much more careful examination than in the ordinary line inspection practiced at maritime ports. All have chest and heart examination with the stethoscope; males have genitals inspected, etc., practically amounting to the minimum requirements outlined by the bureau for an intensive examination. Consequently, in reporting these examinations, only those are classed as intensive in which, for some cause, an even more thorough examination is required.

A service officer spends a part of each day at San Ysidro. The hours are 1.30 to 4 p. m., except Saturday, when they are 9 a. m. to 12 m. Frequently, especially on Saturday, it is necessary to remain much later than those hours, not on account of the amount of work, but because of late comers. As it requires nearly an hour to make the trip each way, this occupies a large proportion of the officer's time.

This officer also assists with quarantine and immigration inspection of the larger vessels arriving at San Diego, and makes the examinations of the aliens under arrest when presented by the immigration officers during the morning. Those presented while he is at San Ysidro are examined by the officer on duty at the relief station of the Public Health Service.

SAN FRANCISCO, CALIF.

Surg. Dunlop Moore in charge. Post-office and telegraphic address, Angel Island, Calif.

The activities of the service at this station may be described under the following headings: (1) Medical inspection of aliens; (2) hospital; (3) laboratory; (4) miscellaneous.

Medical inspection of aliens.—Following the practice of former years, the primary medical inspection of arriving alien passengers and members of crew is conducted on board ship by the quarantine boarding officers. The more important passenger vessels from the Orient being also boarded by a representative of this office. All secondary examinations and all intensive examinations are conducted at the Angel Island Immigration Station. The aliens arriving at this port differ from those seen on the Atlantic seaboard in that they have been officially examined abroad only in rare instances and that their sanitary antecedents are usually subnormal. For the reasons stated, arriving aliens are, whenever practicable, subjected to intensive examination, including microscopic examination of feces. It appears that a large portion of the steerage accommodations on vessels arriving at San Francisco from Asia are at present occupied by Filipinos, who are not subject to immigration inspection, and that the normal Chinese immigration has in part been diverted to other ports.

Hospital.—As in former years the small immigration hospital at this port has been conducted by the service under the administrative supervision of the Department of Labor. As this institution was built and equipped some 17 years ago it will require considerable modernization in the near future. No recommendation for extensive expenditures for this purpose will be made, however, until the question of removing the immigration station to a more accessible location, which has been under consideration for several years, has been settled. The increase in number of hospital admissions was chiefly due to a small epidemic of mumps and a greater incidence of other minor contagious diseases, such as scabies and measles. Two cases of cerebrospinal fever developed in the detention quarters, the disease in both instances being traceable to infection on shipboard.

Laboratory.—Microscopic examination of feces for helminthic ova and embryos continues to be an interesting feature of the work of the laboratory. One thousand one hundred and twelve such specimens were examined, 384 of which were found negative and the presence of parasites, in order of frequency was determined as follows: *Ascaris lumbricoides*, *Trichuris trichiura*, hookworm, *Clonorchis sinensis*, *Strongyloides stercoralis*, *Fasciolopsis buski*, *Hymenolepis nana*, *Taenia saginata* (or *solium*), *Metagonimus yokogawai*. Four hundred and seventy arriving Chinese immigrants, bound for San Francisco, were examined, with the following results:

Name of parasite found	Number of infections	Per cent	Name of parasite found	Number of infections	Per cent
Clonorchis sinensis, alone	23	4.89	Clonorchis, hookworm, and trichuris	2	0.43
Hookworm (including Ancylostoma and necator)	6	1.28	Clonorchis, ascaris, and trichuris	11	2.34
Ascaris lumbricoides, alone	148	31.49	Hookworm, ascaris, and trichuris	24	5.11
Trichuric trichiura, alone	36	7.66	Clonorchis, hookworm, ascaris, and trichuris	5	1.06
Clonorchis and hookworm	2	.43	Ascaris, trichuris, and fasciolopsis buski	1	.21
Clonorchis and ascaris	4	.86	Clonorchis, trichuris, and hymenolepis nana	1	.21
Clonorchis and trichuris	5	1.06	Negative	114	24.26
Hookworm and ascaris	5	1.06			
Hookworm and trichuris	5	1.06			
Ascaris and trichuris	76	16.17			
Clonorchis, hookworm, and ascaris	2	.43	Total	470	100.01

The above statistics are of interest as showing that the cosmopolitan species, *Ascaris* and *Trichuris*, are, in South China, as in most other parts of the world, the most common human helminths and that in certain groups, as above illustrated, clonorchiasis may be encountered more frequently than uncinariasis, though this order would be reversed when any considerable number of individuals other than southern Chinese are included among those examined. The preceding figures relate *only* to Chinese immigrants bound for San Francisco. With few exceptions these Chinese are natives of the single Province of Kwangtung and are supposed to have been medically examined by steamship agencies and found free from uncinariasis and clonorchiasis at time of foreign embarkation.

If more than one specimen were examined the number of negative results would show a decrease and the instances of polyparasitism would be markedly increased.

Miscellaneous.—Under this heading may be noted the following duties: One thousand seven hundred and eighty-three out-patient treatments were administered to detained aliens and others suffering from minor ailments not requiring hospitalization; 83 aliens were vaccinated against smallpox prior to deportation; 92 aliens, permitted to ship out as members of crew in lieu of deportation, were specially examined to determine their physical fitness to perform the duties of seamen; 49 applicants for admission were specially examined for the purpose of determining their approximate ages.

SAN PEDRO, CALIF.

Surg. H. A. Spencer in charge. Post-office and telegraphic address, San Pedro, Calif.

At this port the immigration officer boards all vessels with the medical officer of the Public Health Service. In the case of cargo vessels, the immigration inspection is made at the same time as the quarantine inspection, the crew being examined on deck. On American vessels any member of the crew found or suspected of being afflicted with a certifiable disease is referred to the immigration officer to ascertain whether the man is an American citizen. If not, a "hold" is issued to the immigration officer, with a request that the seaman be presented at the out-patient office of the Public Health Service for further medical examination. Passengers are examined aboard ship, providing the number is small. If the delay incident to the immigration examination of passengers is found to be too great to warrant detaining the ship at anchor, the boarding officer rides the ship to the dock with the immigration officer and the inspection is there completed. When the number of alien passengers aboard an incoming vessel is seven or more, it has been found advisable to take the passengers to the immigration station for the medical examination. Intercoastal vessels and vessels from Canadian ports are in many instances required to pass an immigration examination, although they are exempt from quarantine inspection. In those cases a medical officer proceeds overland with the immigration officer and makes the required examination at the dock.

All alien immigrants arriving at this port fall principally within the steerage passenger type, and originate in the Orient, South America, Central America, and Mexico. A few European passengers arrive, but the number is very small. All alien passengers arriving are examined whether the destination be San Pedro or ports north. In case a certifiable or suspected certifiable condition is found in an alien passenger destined for a Northern Pacific port, the alien passenger manifest is indorsed to the effect that "all passengers listed thereon have been examined and passed, with the exception of the following." It is understood that those listed in the indorsement are further finally examined on arrival at ports of destination.

SCOBEY, MONT.

Acting Asst. Surg. T. M. Morrow in charge. Post-office and telegraphic address, Scobey, Mont.

The majority of aliens examined at this port are from the British Isles or English possessions. Second to this class come former Americans, and following these, persons from the northern European countries—Russians, Norwegians, and Swedes. The greater number of these persons are engaged in agricultural pursuits or allied industries, including laborers, who have but little education.

SEATTLE, WASH.

Surg. L. D. Fricks in charge. Post-office and telegraphic address, Seattle, Wash.

Service-immigration activities at this station are comprised under two headings—(*a*) Medical inspection of aliens, and (*b*) medical relief furnished to detained aliens and to arrest cases of the Department of Justice held at the immigration station.

The primary medical inspection of aliens is carried out at the Port Townsend Quarantine Station on board ship in conjunction with quarantine inspection. Whenever an alien is found suffering from a disease or disability requiring action by the immigration officials, a notation is made on the immigration passenger or crew list and a certificate issued. Further appropriate action is then taken on arrival of the vessel at Seattle.

Three thousand five hundred and ninety-four aliens entered the port of Seattle during the fiscal year. Of this number, 959 were brought to the immigration station and presented to the service officer for medical examination by the immigration officials; 196 of those examined were certified for disease or defect, of whom 103 were deported.

A heavy intestinal parasite infestation continues to be found among orientals entering this port. Fully 95 per cent of the orientals examined showed parasites in their stools, the following varieties being those most commonly encountered: *Ascaris lumbricoides*, *Trichuris trichiura*, *Uncinaria*, and *Clonorchis sinensis*. The highest percentage of clonorchiasis was found among the Chinese aliens and relatively fewer cases among the Japanese. For some unknown reason the percentage of clonorchiasis found at this port continues higher than at any other port of entry in the United States. This is particularly noticeable when comparison is made with San Francisco, where the class of entering aliens is much the same as it is at Seattle. The explanation probably rests on the fact that the orientals entering these two ports come from widely separated localities.

Medical relief was furnished by the service to detained aliens, including department warrant cases and also Department of Justice arrest cases; that is, to violators of the prohibition and narcotic laws who are held at the immigration station.

The immigration authorities furnish a dispensary in the immigration building at First Avenue and Union Street. The dispensary is fairly well equipped for the treatment of minor cases and is stocked with drugs and surgical appliances adequate to the character of medical service required. All microscopical examinations are made in this office and detained aliens requiring medical attention are brought there every morning for medical treatment by the service officer in charge.

TUCSON, ARIZ.

Acting Asst. Surg. I. E. Huffman in charge. Post-office and telegraphic address, Tucson, Ariz.

The United States immigration station at Tucson, Ariz., is an inland station and the concentration point for all aliens, particularly Europeans, against whom deportation proceedings are instituted in the State of Arizona. All deportation cases originating at Tucson are accorded a medical examination, and the Public Health Service officer is requested to look after the physical condition of these aliens, as well as other aliens sent here for detention pending deportation from other Arizona stations, who have been accorded an examination, in most cases, prior to their delivery at Tucson.

VICTORIA, BRITISH COLUMBIA

Acting Asst. Surg. C. D. Holmes in charge. Post-office and telegraphic address, Victoria, British Columbia.

The class of alien now endeavoring to enter the United States is, as of recent years, of a much higher standard physically and morally. This is probably due to the influence of the quota law, and only those aliens who are eligible in every respect attempt to enter. Attention is invited to the fact that there were no certifications among the alien seamen. This is due to the fact that these men all reside in Victoria and vicinity and if suffering from any case of illness would not work, but remain at their homes.

VINEYARD HAVEN, MASS.

Asst. Surg. G. J. Van Beeck in charge. Post-office and telegraphic address, Vineyard Haven, Mass.

There is very little immigration work at this station. The only aliens examined are the crews of vessels which make this port in stress of storm or when provisions are low.

WINNIPEG, CANADA

Acting Asst. Surg. G. B. Story in charge. Post-office and telegraphic address, Winnipeg, Manitoba, Canada.

During the fiscal year 1927 over 21,000 persons applied for admission to the United States through the entry port of Winnipeg. Eleven thousand nine hundred were referred for medical examination. A great many aliens enter through this port to remain for short periods of time in the United States to enable them to obtain medical and surgical relief at the large clinical centers. These cases come from all parts of the various Provinces of the Dominion of Canada. Of the total number of aliens admitted to the United States, 75 per cent of them were Canadian citizens; approximately one-half of this number were visitors, who remained here for a short period of time. Among those establishing permanent residences, the majority were well-educated young men and women of the most desirable class, whose destination was the large industrial centers of the United States.

Owing to the prevalence of typhoid fever in the Provinces to the east of Manitoba, a careful watch has been kept, and it is believed that no cases or carriers have passed port. The entire office force and traveling inspectors operating out of this station were given antityphoid vaccine early in March, when the epidemic was first reported.

DIVISION OF SANITARY REPORTS AND STATISTICS

In Charge of Asst. Surg. Gen. C. C. Pierce

The fiscal year ended June 30, 1927, was notable for good health conditions throughout the United States. This was largely due to a continuation of the improvement in the morbidity and mortality rates from the more common communicable diseases, especially to unusually low incidence of influenza and pneumonia during the early months of 1927.

Morbidity Reports

The duty of collecting reports of the prevalence and geographic distribution of diseases dangerous to the public health is imposed upon the Surgeon General of the Public Health Service by the act of February 15, 1893, now incorporated in the Code of Laws of the United States as Title 42, section 43.

The Division of Sanitary Reports and Statistics received information as to the prevalence of diseases dangerous to the public health from officers of the Public Health Service stationed throughout the United States and in foreign countries, from State and local health officers, from American consular officers in foreign countries, from the Pan American Sanitary Bureau, the health section of the secretariat of the League of Nations, the International Office of Public Hygiene, and from foreign governmental agencies.

MORBIDITY REGISTRATION AREA

The Public Health Service is dependent upon State and local health officers for reports of the prevalence and geographic distribution of diseases dangerous to the public health in the United States. The laws governing the collection of these reports vary in the different States; the diseases required to be reported are not the same, and the time within which reports must be made differs. The establishment of definite standards in these and other particulars is desirable. The creation of a registration area for diseases dangerous to the public health would do much to secure uniformity in the reports and make possible comparisons between different sections, which can not be done fairly with the present reports. Such an area would also do much to encourage the reporting of communicable diseases, and make it possible to secure more reliable reports than can be secured under the present system.

COLLABORATING AND ASSISTANT COLLABORATING EPIDEMIOLOGISTS

The appointment of agents of the Federal Government in the State and local health offices for the purpose of collecting and transmitting to the Public Health Service information of epidemics of diseases dangerous to the public health and the prevalence of communicable diseases is of great assistance in securing prompt and regular notification of morbidity. These agents are State or local health officers or employees of the health departments, and their salaries are nominal—$1 per annum.

At the end of the fiscal year there were 43 collaborating epidemiologists, located in the health departments of 42 States and the Territory of Porto Rico, and 4,395 assistant collaborating epidemiologists held appointments in city or county health departments.

The following table shows the States in which these officers were stationed on June 30, 1927:

Collaborating and assistant collaborating epidemiologists as of June 30, 1927

State or possession	Collaborating epidemiologists	Assistant collaborating epidemiologists
Alabama	1	34
Arizona	1	50
Arkansas	1	213
California	1	267
Colorado	1	224
Connecticut	1	0
Delaware	1	0
Florida	1	11
Georgia	1	27
Idaho	1	9
Illinois	1	107
Indiana	1	504
Iowa	1	314
Kansas	1	104
Kentucky	1	129
Louisiana	1	17
Maine	1	475
Maryland	1	79
Massachusetts	1	0
Michigan	1	2
Minnesota	1	1
Mississippi	1	84
Missouri	1	119
Montana	1	0
Nebraska	1	96
New Jeresy	1	0
New Mexico	0	26
New York	0	1
North Carolina	1	111
North Dakota	1	86
Ohio	1	161
Oklahoma	1	82
Oregon	1	102
Porto Rico	1	2
South Carolina	1	14
South Dakota	1	84
Tennessee	1	75
Texas	1	321
Utah	1	36
Vermont	1	10
Virginia	1	32
Washington	1	48
West Virginia	1	77
Wisconsin	1	233
Wyoming	1	28
Total	43	4,395

TELEGRAPHIC REPORTS OF MORBIDITY

Immediate telegraphic notice of unusual outbreaks of communicable disease is sent by officers of the Public Health Service and by State health officers to the bureau at Washington. These reports are required from service officers by the regulations of the Public Health Service. State health officers furnish them in accordance with the provisions of a resolution adopted by the Tenth Annual Conference of State and Territorial Health Authorities with the Public Health Service held in Washington June 1, 1912, the Surgeon General being authorized to collect such information by section 4 of the act of February 15, 1893.

During the fiscal year the number of diseases included in the regular weekly telegraphic reports from State health officers was reduced in the interest of economy. These reports now include diphtheria, influenza, measles, meningococcus meningitis, poliomyelitis (infantile paralysis), scarlet fever, smallpox, and typhoid fever.

South Carolina was added to the list of States from which these weekly telegraphic reports are received. Regular weekly reports are now received from all of the States except Nevada, New Hampshire, and Ohio.

These are preliminary reports. Many of the States do not have complete information from all parts of the State at the time the telegram is sent, but the reports furnish a valuable current index of health conditions.

Mimeographed bulletins are prepared giving summaries of the reports received, and these are sent to State health officers throughout the country. The Public Health Service thus acts as a clearing house for receiving and distributing information which is needed by all health officers. The data are also published in the weekly Public Health Reports.

MONTHLY STATE REPORTS

Monthly reports from State health officers give more nearly complete reports of the prevalence of communicable diseases. These reports from most of the States give the distribution of the diseases by counties or other political subdivisions.

Summaries of these reports are published in the weekly Public Health Reports and the details are tabulated and filed for reference as needed.

These monthly reports include all of the communicable diseases which are reported to the State departments of health. The following diseases are included in the reports from most of the States when these diseases are present:

Anthrax.
Chicken pox.
Diphtheria.
Dysentery.
German measles.
Hookworm disease.
Influenza.
Leprosy.
Lethargic encephalitis.
Malaria.
Measles.
Mumps.
Ophthalmia neonatorum.
Paratyphoid fever.
Pellagra.
Poliomyelitis (infantile paralysis).
Rabies.
Scarlet fever.
Septic sore throat.
Smallpox.
Tetanus.
Trachoma.
Tularaemia.
Typhoid fever.
Typhus fever.
Whooping cough.

Monthly reports are received from all of the States except Nevada, Texas, and Utah. The Territory of Hawaii and the District of Columbia send these reports.

ANNUAL STATE MORBIDITY REPORTS

The annual volume of Notifiable Diseases in States for the year 1925 was issued during the fiscal year. The volume for the year 1926 was partly compiled on June 30, 1927. Delayed reports from some of the States prevent early publication of these annual summaries.

CITY REPORTS

Reports from cities in the United States having 10,000 population or over were received weekly by mail during the fiscal year. These reports include the number of cases of each of the principal communicable diseases and the number of deaths caused by these diseases during the week; also the total number of deaths from all causes in the city. The diseases included in the regular reports are as follows:

Chicken pox.
Dengue.
Diphtheria.
Influenza.
Lethargic encephalitis.
Measles.
Meningococcus meningitis.
Mumps.
Pellagra.
Pneumonia (all forms)
Poliomyelitis (infantile paralysis).
Rabies in animals.
Rabies in man.
Scarlet fever.
Smallpox.
Tuberculosis (all forms).
Typhoid fever.
Typhus fever.
Whooping cough.

At the close of the fiscal year reports were being received from 579 cities, but some of these cities do not send the reports regularly, some do not report deaths, and some do not include in the reports all of the diseases included on the blank. Reports from nearly all of the larger cities in the United States are received regularly and are reasonably accurate and complete, but in some of the smaller cities appropriations for clerical help are very small, with the result that when clerks are ill or when an epidemic makes unusual demands upon the office force, these reports are likely to be overlooked.

The following table gives the number of cities in each State from which these reports are received:

Alabama	9
Arizona	1
Arkansas	5
California	25
Colorado	5
Connecticut	15
Delaware	1
District of Columbia	1
Florida	5
Georgia	9
Idaho	2
Illinois	32
Indiana	29
Iowa	15
Kansas	12
Kentucky	5
Louisiana	3
Maine	10
Maryland	3
Massachusetts	61
Michigan	23
Minnesota	11
Missouri	7
Montana	5
Nebraska	3
Nevada	1
New Hampshire	8
New Jersey	36
New Mexico	1
New York	38
North Carolina	6
North Dakota	2
Ohio	45
Oklahoma	2
Oregon	1
Pennsylvania	54
Rhode Island	8
South Carolina	4
South Dakota	2
Tennessee	5
Texas	13
Utah	1
Vermont	2
Virginia	11
Washington	11
West Virginia	9
Wisconsin	21
Wyoming	1
Total	579

It has been impracticable, owing to lack of personnel, to prepare for publication the data from all of the cities. During the fiscal year 1927 the reports from 101 cities, located in all parts of the United States, were tabulated, comparisons were made with previous years, and the results were published in the weekly Public Health Reports.

INSANE, FEEBLE-MINDED, AND EPILEPTIC

During the fiscal year there was a large increase in the number of institutions for the care of the insane, feeble-minded, and epileptic from which monthly reports were received.

Publication of the reports has been somewhat delayed, owing to the limited force available for the work.

INTERNATIONAL EXCHANGE OF SANITARY INFORMATION

The International Sanitary Convention and the Pan American Sanitary Convention both provide for interchange of information regarding the prevalence of diseases dangerous to the public health. In accordance with the provisions of these conventions, notice has been given through the Department of State to the proper governments of outbreaks of communicable or quarantinable diseases which occurred in the United States. Notice has also been given to the Pan American Sanitary Bureau and to the International Office of Public Hygiene at Paris, France.

Epidemiological intelligence is constantly exchanged between the Public Health Service and the health section of the secretariat of the League of Nations. The reports issued by the health section are becoming more comprehensive and more valuable each year.

FOREIGN REPORTS

There is a constant increase in the number of reports received by the Public Health Service showing the prevalence in foreign countries of diseases dangerous to the public health. These reports also become of greater value from year to year as facilities for collecting morbidity reports improve and the desired information is secured from a larger number of countries. However, many countries do not yet have efficient administrative machinery for securing prompt and definite information as to the prevalence of disease within their territory.

During the fiscal year the Public Health Service continued to receive reports from officers of the service stationed abroad and from American consuls in all parts of the world. These reports, together with those from the health section of the League of Nations and foreign governmental agencies, were examined, abstracts of the essential part of the reports were made, and summaries or tabulations were published in the weekly Public Health Reports.

Additional clerical help is needed to examine the foreign reports, classify and arrange them, and make the information they contain readily available when needed.

PREVALENCE OF DISEASE

No case of cholera or yellow fever occurred in the United States during the fiscal year, but two cases of plague were taken from a vessel which arrived at the New Orleans Quarantine Station in October, 1926.

The following table gives a comparison of the number of cases of the principal communicable diseases and deaths from these diseases for the years 1925 and 1926. Some of the reports for 1926 had not been received at the time of writing, but all the States are included for which the figures for both years were available.

CASES

Disease	Number of States[1]	Aggregate population (in thousands)		Cases		Cases per 100,000 population	
		1925	1926	1925	1926	1925	1926
Chicken pox	39	93, 129	96, 190	138, 332	154, 483	148. 5	160. 6
Diphtheria	41	104, 238	107, 595	91, 098	86, 574	87. 4	80. 5
Influenza	41	104, 238	107, 595	----------	----------	----------	----------
Malaria	33	98, 054	101, 252	----------	----------	----------	----------
Measles	40	103, 591	106, 900	219, 291	658, 360	211. 7	615. 9
Meningococcus meningitis	29	70, 246	72, 482	1, 348	1, 705	1. 9	2. 4
Mumps	35	89, 070	91, 899	93, 874	62, 943	105. 4	68. 5
Pellagra	35	100, 570	103, 814	----------	----------	----------	----------
Pneumonia (all forms)	39	103, 099	106, 378	----------	----------	----------	----------
Poliomyelitis	35	88, 140	91, 064	5, 499	2, 412	6. 2	2. 6
Scarlet fever	41	104, 238	107, 595	179, 981	188, 778	172. 7	175. 5
Smallpox	41	104, 238	107, 595	34, 608	30, 450	33. 2	28. 3
Tuberculosis (all forms)	40	104, 161	107, 518	----------	----------	----------	----------
Tuberculosis (respiratory system)	36	99, 244	102, 339	----------	----------	----------	----------
Typhoid fever	40	101, 732	105, 172	41, 107	34, 367	40. 4	32. 7
Whooping cough	41	104, 238	107, 595	145, 265	185, 969	139. 4	172. 8

DEATHS

Disease	Deaths		Deaths per 100,000 population		Deaths per 100 cases	
	1925	1926	1925	1926	1925	1926
Chicken pox	93	96	0. 1	0. 1	0. 1	0. 1
Diphtheria	7, 978	7, 605	7. 7	7. 1	8. 8	8. 8
Influenza	28, 941	40, 311	27. 8	37. 5	----------	----------
Malaria	2, 488	2, 428	2. 5	2. 4	----------	----------
Measles	2, 236	7, 599	2. 2	7. 1	1. 0	1. 2
Meningococcus meningitis	602	784	. 9	1. 1	44. 7	46. 0
Mumps	83	57	. 1	. 1	. 1	. 1
Pellagra	3, 114	3, 635	3. 1	3. 5	----------	----------
Pneumonia (all forms)	98, 380	109, 276	95. 4	102. 7	----------	----------
Poliomyelitis	1, 317	718	1. 5	. 8	23. 9	29. 8
Scarlet fever	2, 662	2, 579	2. 6	2. 4	1. 5	1. 4
Smallpox	690	380	. 7	. 4	2. 0	1. 2
Tuberculosis (all forms)	88, 684	90, 234	85. 1	83. 9	----------	----------
Tuberculosis (respiratory system)	74, 308	76, 033	74. 9	74. 3	----------	----------
Typhoid fever	8, 484	7, 080	8. 3	6. 7	20. 6	20. 6
Whooping cough	6, 207	8, 587	6. 0	8. 0	4. 3	4. 6

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[1] In addition to the number of States given, the District of Columbia is included.

Diphtheria.—The case and death rates for diphtheria for the year 1926 were the lowest ever recorded in the United States. The following table shows the course of the diphtheria morbidity and mortality rates in the United States since 1916:

Rates per hundred thousand population

Year	Number of States	Case rate	Death rate	Year	Number of States	Case rate	Death rate
1916	24	131. 7	12. 3	1922	44	164. 1	14. 2
1917	35	136. 1	14. 2	1923	46	133. 3	11. 5
1918	33	107. 4	12. 6	1924	46	107. 3	8. 8
1919	32	139. 7	12. 9	1925	46	85. 2	7. 6
1920	35	156. 7	14. 4	1926	41	80. 5	7. 1
1921	43	204. 0	16. 5				

During the first six months of the year 1927, there was a considerable increase in diphtheria cases and deaths. Final figures are not yet available, but it is evident that the diphtheria rates for 1927 will be higher than those for 1926, although much lower than those prevailing a few years ago.

Influenza was widely prevalent in the United States during the early months of 1926; but during the corresponding period of 1927 comparatively few cases of this disease were reported, and the remarkably low death rates during the first half of the year 1927 are attributable in part to the mild character of the cases of influenza and the fact that pneumonia developed in only a small percentage of the cases.

Measles.—Forty States reported 658,360 cases of measles in 1926, with 7,599 deaths. These are more than three times the corresponding figures for the year 1925. The case and death rates are higher than those for any other year since 1923. The rates for measles fluctuate widely from year to year.

Pellagra.—Thirty-five States reported 3,635 deaths from pellagra for 1926 and 3,114 for 1925.

Poliomyelitis (infantile paralysis).—Thirty-five States reported 2,412 cases of poliomyelitis in 1926, with 718 deaths. These figures may be compared with 5,499 cases and 1,317 deaths in 1925. For the last six years the case rates for poliomyelitis per hundred thousand population have been as follows: 1921, 7.1; 1922, 2.4; 1923, 3.5; 1924, 5.7; 1925, 6.2; 1926, 2.6. The highest case rates in 1926 were 6 per hundred thousand population in New York State and Vermont. Massachusetts had a rate of 5.8, and Delaware 4.6 per hundred thousand. This disease is most prevalent in the summer and fall months.

Scarlet fever.—In 1926 there was a slight increase in cases of scarlet fever over the number in 1925, but the deaths from this disease were fewer in 1926. Forty-one States reported 179,981 cases of scarlet fever with 2,662 deaths in 1925, and 188,778 cases and 2,579 deaths in 1926. The death rates from scarlet fever have been decreasing since 1921.

Smallpox.—There was a decrease of 12 per cent in the number of cases of smallpox reported in 41 States, but the decrease in the number of deaths amounted to 45 per cent. This indicates that in 1926 fewer localities were afflicted with the virulent strain of the disease than was the case in 1925.

Vaccination is not complete anywhere in the United States, but it is probable that greater efforts to stamp out the disease were made in those cities where a high death rate had impressed upon the people the serious character of the disease.

The difference between the mild and virulent strains of the disease is shown by the fact that half of the deaths from smallpox during 1926 occurred in two cities. One thousand one hundred and four cases of smallpox in Los Angeles and San Francisco, Calif., resulted in 190 deaths, while preliminary reports from 41 States showed 29,346 cases of smallpox outside of these cities, with only 190 deaths. At the close of the fiscal year the disease appeared to be checked in these cities.

In preceding annual reports attention has been called to the fact that a large percentage of the deaths from smallpox have occurred in comparatively few cities.

Tuberculosis.—This disease has dropped from first place in the list of diseases causing the greatest number of deaths to fifth place. Yet much remains to be done before the scourge is finally conquered. Reports from 40 States showed more than 90,000 deaths attributed to tuberculosis in 1926, while there were less than 89,000 deaths from this cause in 1925. However, the increase was relatively less than the increase in the population during the year, and there were 83.9 deaths per hundred thousand population in 41 States in 1926, while in 1925 the tuberculosis death rate in these States was 85.1 per hundred thousand.

Typhoid fever.—In 1925 there was a reaction from the decrease in the typhoid fever death rate which has been observed for several decades. During 1926, however, the number of deaths from typhoid fever was 16 per cent less than in 1925. Forty States reported 34,367 cases of typhoid fever with 7,080 deaths in 1926, and 41,107 cases with 8,484 deaths in 1925.

Whooping cough.—During the year 1926, 41 States reported 185,969 cases of whooping cough with 8,587 deaths. This is an increase over the numbers for the year 1925, when the same States reported 145,265 cases and 6,207 deaths. The serious nature of this disease is indicated by the fact that it caused more than 9,000 deaths in the United States during 1926.

Sanitary Legislation and Decisions

Federal and State sanitary laws and regulations.—Since 1911 the Public Health Service has annually collected and compiled laws and regulations pertaining to public health. During the present fiscal year Supplement No. 59, containing the Federal and State sanitary laws and regulations enacted and adopted during the calendar year 1925, was issued. A similar compilation for 1926 was almost ready to go to the printer at the close of the fiscal year.

Smallpox vaccination laws, regulations, and court decisions.—Another publication issued during the year was Supplement No. 60, entitled "Smallpox Vaccination Laws, Regulations, and Court Decisions." This bulletin presents the existing Federal and State laws and regulations pertaining to vaccination against smallpox, together with abstracts of all decisions of courts of last resort on the subject of vaccination. An analysis of the provisions of the various laws and regulations and a review of the court decisions are given, followed by the text of the laws and regulations themselves and by abstracts of the decisions.

Municipal sanitary ordinances and regulations.—Public health ordinances and regulations adopted during the year 1926 were collected from those cities in the United States having a population of over 10,000 in 1920. Work was also commenced on a compilation of such municipal sanitary ordinances and regulations for the four-year period 1923–1926. The series, of which this compilation will be a part, dates from 1910.

Court decisions pertaining to public health.—For several years the Public Health Service has abstracted and published currently in the Public Health Reports all decisions rendered by State and Federal courts of last resort on matters relating to public health. During the present year this work was continued, the decisions being secured at the earliest possible moment through current weekly advance sheets and digests.

Comptroller General's decisions.—Decisions of the Comptroller General of the United States which related directly to the Public Health Service were abstracted currently throughout the year.

Miscellaneous inquiries.—Requests for information concerning laws and court decisions on various public health subjects were received and complied with as fully as possible.

PUBLICATIONS ISSUED BY THE DIVISION

The Public Health Reports (vol. 41, pt. 2, and vol. 42, pt. 1) was issued by the division each week during the fiscal year. It contained text articles presenting the results of research work carried on by investigators of the Public Health Service in the various fields of preventive medicine and sanitary science, abstracts of current court decisions relating to the public health, public health engineering abstracts, and articles on other subjects of especial interest to public health authorities, sanitarians, and public health workers generally. It also contained current information regarding the prevalence of communicable diseases in the United States and of quarantinable and the important communicable diseases in foreign countries, together with notes on health administration and preventive measures and abstracts of sanitary information furnished by the consuls and from other sources. The issues printed during the fiscal year contained 3,520 pages, as compared with 2,835 pages during the preceding year and 3,094 pages in 1925.

Although the information printed in Public Health Reports is required by law and treaty obligations, and necessitated by administrative demands, to be furnished free to practically its entire mailing list, a drive was made during the fiscal year to increase the number of paid subscriptions. A number of the mailing lists maintained by the service were circularized and permission was given by several other Government bureaus to use their mailing lists. As a result of this circularization the paid subscription list, which is maintained by the Superintendent of Documents, Government Printing Office, was increased from 130 to 780 names.

Seventy-eight of the most important articles (1,411 pages) were issued in separate form, permitting a more economical official and general distribution.

Seven supplements to Public Health Reports (Nos. 58 to 64—867 pages) were issued during the fiscal year. These supplements contained material such as compilations of public health laws and regulations, extensive detailed reports, and articles of a technical nature unsuitable for Public Health Reports. A saving in printing costs was secured by issuing the compilations of notifiable diseases (annual summaries) reported in large and small cities as supplements instead of printing them in Public Health Reports and reprinting them as has been done heretofore.

During the year new editions were published of 10 previously issued publications.

Section of Public Health Education

During the fiscal year ended June 30, 1927, 109 new service publications were distributed by the section of public health education, as compared with 83 during the preceding year. The total distribution of copies of these publications and of editions of previously published documents aggregated 319,471, as compared with 352,890 during the preceding fiscal year. The smaller distribution was due to the reduction in the size of the editions. Out of the 319,471 copies of publications distributed, 283,320 were sent in response to individual requests for information. The remaining number were distributed through the various mailing lists maintained by the bureau. This distribution does not include the publications printed and distributed by the division of venereal diseases.

There were 53 requests for the loan of stereopticon slides during the year. Approximately 4,547 slides were loaned to universities, officials of the Public Health Service, sanitarians, and others in response to these requests. The work of the stereopticon library has been greatly handicapped during the past few years owing to the shortage of slides and to the lack of funds for making new slides and replacing those which have been broken from time to time in transit.

Many requests have been received for the loan of exhibit material, posters, mats, and motion-picture films, but, because of the lack of funds, compliance with most of these requests has been impossible.

Health Information by Radio

In the annual report for 1923 an account was given of the origin and development of the health information by radio service which is carried on by this division.

This service was created for the purpose of giving out authoritative information in popular language relating to the nature, causes, and prevention of disease and the conservation of health.

At the present time two lectures a month are mailed from this bureau throughout the year to 49 radio stations that are cooperating with the Public Health Service in the dissemination of protective health information by radio.

Since March, 1922, the Foreign Language Information Service of New York City has translated these talks into other languages than English and submitted them for publication to the magazines and newspapers using its service.

In addition to the delivery of these lectures by radio and their use by the foreign-language magazines and newspapers, many magazines and newspapers printed in English have published these lectures. By the close of the fiscal year 1927, 297 of these lectures had been issued.

Publications Distributed by the Division

REPRINTS FROM THE PUBLIC HEALTH REPORTS

The following is a list of publications distributed by the division during the fiscal year:

1068. The Second International Conference on the Biological Standardization of Certain Remedies. March 19, 1926. 12 pages.

1069. The Relationship of Endemic Goiter to Certain Potential Foci of Infection. By Robert Olesen and Neil E. Taylor. March 26, 1926. 16 pages.
1070. Community Responsibility of Hospitals. By E. H. Lewinski-Corwin. April 2, 1926. 8 pages.
1071. The Public Health Nurse. By J. G. Townsend. April 9, 1926. 12 pages.
1072. Public Health Service Publications. A List of Publications Issued During the Period November, 1925–March, 1926. April 9, 1926. 4 pages.
1073. The Relative Incidence of Typhoid Fever in Cities, Towns, and Country Districts of a Southern State. By Chas. N. Leach and Kenneth F. Maxcy. April 16, 1926. 6 pages.
1074. Whole-Time County Health Officers, 1926. April 16, 1926. 5 pages.
1075. Some Publications Suitable for General Distribution. April 16, 1926. 12 pages.
1076. A Comparison of Full-Time and Part-Time County Health Units in Kansas. By Earle G. Brown. April 23, 1926. 4 pages.
1077. The Influence of Vitamin Deficiencies on Susceptibility to Certain Poisons. By Maurice I. Smith, W. T. McClosky, and E. G. Hendrick. April 23, 1926. 14 pages.
1078. The Intensive Treatment for Hay Fever. By William Scheppegrell. April 30, 1926. 4 pages.
1079. Extent of Rural Health Service in the United States 1922–1926. By L. L. Lumsden. May 7, 1926. 12 pages.
1080. The Leprosy Problem in the United States. By O. E. Denney. May 14, 1926. 8 pages.
1081. Endemic Goiter and Intelligence. By Robert Olesen and Mabel R. Fernald. May 21, 1926. 16 pages.
1082. Notes on the Influence of Temperature and Humidity on Oviposition and Early Life of Anopheles. By Bruce Mayne. May 21, 1926. 5 pages.
1083. A Note on an Experimental Pellagralike Condition in the Albino Rat. By Joseph Goldberger and R. D. Lillie. May 28, 1926. 5 pages.
1084. A Distinctive Test for Cysteine. By M. X. Sullivan. May 28, 1926. 28 pages.
1085. Studies on the Etiology of Epidemic Encephalitis. I. The Streptococcus. By Alice C. Evans and Walter Freeman. June 4, 1926. 24 pages.
1086. Results of Dick Tests Made on Different Groups. By R. E. Dyer, W. P. Caton, and B. T. Sockrider. June 11, 1926. 8 pages.
1087. Clinical Observations on Endemic Typhus (Brill's Disease) in Southern United States. By Kenneth F. Maxcy. June 18, 1926. 8 pages.
1088. Destroying Engorged Anopheles as a Malaria Control Measure. By J. A. Le Prince. June 18, 1926. 6 pages.
1089. Agglutination, Cross-Agglutination and Agglutinin Absorption in Tularaemia. By Edward Francis and Alice C. Evans. June 25, 1926. 23 pages.
1090. Six Additional Cases of Laboratory Infection of Tularaemia in Man. By R. R. Parker and R. R. Spencer. July 2, 1926. 14 pages.
1091. A Case of Tularaemia in a Laboratory Worker. By Louis V. Dieter. July 2, 1926. 4 pages.
1092. Hereditary Transmission of Tularaemia Infection by the Wood Tick, Dermacentor Andersoni Stiles. By R. R. Parker and R. R. Spencer. July 9, 1926. 5 pages.
1093. The Susceptibility of the Coyote (*Canis lestes*) to Tularaemia. By R. R. Parker and Edward Francis. July 9, 1926. 4 pages.
1094. The So-Called Action of Acid Sodium Phosphate in Delaying the Onset of Fatigue. By Frederick B. Flinn. July 16, 1926. 14 pages.
1095. A State-wide Smallpox Survey in Tennessee. By W. J. Breeding and E. A. Lane. July 23, 1926. 5 pages.
1096. Benzol Poisoning as an Industrial Hazard. Review of studies conducted in cooperation with the subcommittee on benzol of the committee on industrial poisoning of the National Safety Council. By Leonard Greenburg. July 2, 9, 23, 1926. 63 pages.
1097. Report of the Committee on Uniform Standard Milk Ordinance. Conference of State and Territorial Health Officers, 1926. July 30, 1926. 10 pages.
1098. A National Program for the Unification of Milk Control. By Leslie C. Frank. July 30, 1926. 34 pages.

1099. United States Public Health Service Standard Milk Ordnance. Modified as adopted by the Conference of State and Territorial Health Officers at Washington, D. C., May, 1926. July 30, 1926. 13 pages.
1100. Food Poisoning from a Streptococcus in Cheese. By B. A. Linden, W. R. Turner, and Charles Thom. August 6, 1926. 6 pages.
1101. Report of a Survey to Determine the Malaria Prevalence in the Okefenokee Swamp. By Bruce Mayne. August 6, 1926. 8 pages.
1102. Incidence of Endemic Thyroid Enlargement in Connecticut. By Robert Olesen and Neil E. Taylor. August 13, 1926. 13 pages.
1103. City Health Officers, 1926. Directory of those in cities of 10,000 or more population. August 13, 1926. 12 pages.
1104. The Influenza Epidemic of 1926. A Preliminary note on certain epidemiological indications. August 20, 1926. 16 pages.
1105. Rocky Mountain Spotted Fever. Certain Characteristics of Blood Virus. By R. R. Spencer and R. R. Parker. August 27, 1926. 6 pages.
1106. State and Insular Health Authorities, 1926. Directory with data as to appropriations and publications. August 27, 1926. 22 pages.
1107. Biological Products. Establishments licensed for the propagation and sale of viruses, serums, toxins, and analogous products. September 3, 1926. 5 pages.
1108. Endemic Goiter and Physical Development. I. Cincinnati School Children. By Robert Olesen and Neil E. Taylor. September 3, 1926. 16 pages.
1109. The Radioactivity of Natural Waters. By W. D. Collins. September 10, 1926. 4 pages.
1110. The Physiological Effects of Currents of Very High Frequency. (135,000,000 to 8,300,000 cycles per second.) By J. W. Schereschewsky. September 10, 1926. 24 pages.
1111. The Notifiable Diseases. Prevalence During 1925 in Cities of Over 100,000. September 17, 1926. 33 pages.
1112. Public Health in State Constitutions. By James A. Tobey. September 24, 1926. 4 pages.
1113. A study of Illness in a General Population Group. Hagerstown Morbidity Studies No. 1: The method of study and general results. By Edgar Sydenstricker. September 24, 1926. 20 pages.
1114. Experimental Studies of Water Purification. I. Description of Experimental Water-Purification Plant. By Frederic J. Moss. II. Preliminary Review of Results of Primary Experiments. By H. W. Streeter. October 1, 1926. 26 pages.
1115. Report of an Epidemic of Glandular Fever (Infectious Mononucleosis), By R. R. Spencer. October 8, 1926. 6 pages.
1116. The Reporting of Notifiable Diseases in a Typical Small City. Hagerstown Morbidity Studies No. II. By Edgar Sydenstricker. October 8, 1926. 6 pages.
1117. The Notifiable Diseases. Prevalence During 1925 in Cities of 10,000 to 100,000 Population. October 15, 1926. 108 pages.
1118. Cooperative Rural Health Work of the Public Health Service in the Fiscal Year 1926. By L. L. Lumsden. October 22, 1926. 40 pages.
1119. Endemic Goiter and School Absenteeism. By Robert Olesen and Neil E. Taylor. October 29, 1926. 10 pages.
1120. What the Government is Doing for Tuberculous Persons. By Lucy Minnigerode. October 29, 1926. 8 pages.
1121. Malaria in the Prairie Rice Regions of Louisiana and Arkansas. By M. A. Barber, W. H. W. Komp, and T. B. Hayne. November 5, 1925. 22 pages.
1122. Pan American Conference of Directors of Health. November 12, 1926. 8 pages.
1123. National Leper Home. (Marine Hospital No. 66.) Review of the more important activities during the fiscal year ended June 30, 1926. By O. E. Denny. November 12, 1926. 5 pages.
1124. Organization of the Health Program of a University. By D. F. Smiley. November 19, 1926. 19 pages.
1125. Distribution of Endemic Goiter in the United States as Shown by Thyroid Surveys. By Robert Olesen. November 26, 1926. 13 pages.
1126. Report of the Committee on Sanitary Control in the Development of Ground-Water Supplies. November 26, 1926. 13 pages.

1127. Health Studies of Negro Children. I. Intelligence Studies of Negro Children in Atlanta, Ga. By Virginia Taylor Graham. December 3, 1926. 25 pages.
1128. The Work of the United States Public Health Service. December 10, 1926. 28 pages.
1129. The Control of Communicable Diseases. Report of the American Public Health Association Committee on Standard Regulations appointed in October, 1916, revised by the committee in October, 1926. December 17, 1926. 35 pages.
1130. An Epidemiological Study of Endemic typhus (Brill's Disease) in the Southeastern United States. With special reference to its mode of transmission. By Kenneth F. Maxcy. December 24, 1926. 29 pages.
1131. Synthesis and Indicator Properties of Some New Sulfonphthaleins. By Barnett Cohen. December 31, 1926. 28 pages.
1132. The Notifiable Diseases. Prevalence in States, 1925. January 7, 1927. 60 pages.
1133. Epidemiological Study of Minor Respiratory Diseases. Progress Report II. Based on records for families of medical officers of the Army, Navy, and Public Health Service and of members of several university faculties. By J. G. Townsend and Edgar Sydenstricker. January 14, 1927. 22 pages.
1134. The Extent of Medical and Hospital Service in a Typical Small City. Hagerstown Morbidity Studies No. III. By Edgar Sydenstricker. January 14, 1927. 11 pages.
1135. Studies on the Etiology of Epidemic Encephalitis. II. Virulent Bacteria Cultivated From So-Called Herpetic and Encephalitic Viruses. By Alice C. Evans. January 21, 1927. 6 pages.
1136. Sterilizing Efficiency of Arsphenamine, Neoarsphenamine, and Sulpharsphenamine in Experimental Syphilis. By Carl Voegtlin and H. A. Dyer. January 21, 1927. 11 pages.
1137. Questions and Answers on Smallpox Vaccination. By J. P. Leake, January 28, 1927. 19 pages.
1138. Some Special Features of the Work of the Public Health Service. February 4 and February 11, 1927. 77 pages.
1139. Toxic Effects of Ethylene Dibromide. By B. G. H. Thomas and W. P. Yant. February 11, 1927. 5 pages.
1140. Paris Green Applied by Airplane in the Control of Anopheles Production. By L. L. Williams, jr., and S. S. Cook. February 18, 1927. 5 pages.
1141. Preparation and use of Investigation Forms. By V. L. Ellicott and Ellen Murphy Englert. February 18, 1927. 5 pages.
1142. A 10-year Record of Absences From Work on Account of Sickness and Accidents. Experience of Employees of the Edison Electric Illuminating Co. of Boston, 1915 to 1924, Inclusive. By Dean K. Brundage. February 25, 1927. 22 pages.
1143. Further Studies on the Relationship of Endemic Goiter to Certain Potential Foci of Infection. II. In Connecticut. By Robert Olesen and Neil E. Taylor. March 4, 1927. 15 pages.
1144. Standard Milk Ordinance Results in 14 Alabama Towns. By Leslie C. Frank, S. W. Welch, and C. A. Abele. March 11, 1927. 11 pages.
1145. The Orthotolidine Reagent for Free Chlorine in Water. By Emery J. Theriault. March 11, 1927. 5 pages.
1146. The Problem of Fetal and Neonatal Death. By Blanche Sterling. March 18, 1927. 35 pages.
1147. Examination of Food Handlers. By M. James Fine. March 25, 1927. 5 pages.
1148. Endemic Thyroid Enlargement in Massachusetts. By Robert Olesen and Neil E. Taylor. 14 pages.
1149. Ship Fumigation Determined by Observed Rodent Infestation. By C. V. Akin and G. C. Sherrard. April 1, 1927. 8 pages.
1150. Review of Literature on the Physiological Effects of Abnormal Temperatures and Humidities. By R. R. Sayers and Sara J. Davenport. April 8, 1927. 63 pages.
1151. Intradermal Smallpox Vaccination. A method for increasing the administrative value of the immediate reaction of immunity. By John N. Force. April 15, 1927. 14 pages.
1152. Arsphenamine-Sodium Thiosulphate Treatment of Experimental Syphilis. By Carl Voegtlin and Helen A. Dyer. April 15, 1927. 8 pages.

1153. Preliminary Report of Screening Studies in Leflore County, Mississippi. By C. P. Coogle. April 22, 1927. 12 pages.

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DIVISION OF MARINE HOSPITALS AND RELIEF

In charge of Asst. Surg. Gen. F. C. Smith

During the fiscal year 1927, 356,746 beneficiaries applied to the marine hospitals and other relief stations of the Public Health Service for treatment or physical examination. Of these, 210,952 were out-patients and 41,851 were hospital patients, and 103,943 were given physical examinations requiring a written report. For details of these transactions see pages 268 to 282, inclusive.

The demands upon marine hospitals and other relief stations for extraneous functions are increasing each year. To instruct and examine ships' officers in first aid, to issue permits to ships for medicinal liquor and narcotics, to vaccinate Government employees engaged in handling mail and in interstate or foreign travel, and to make the physical examinations required by the Civil Service Commission, Post Office Department, and the Employees' Compensation Commission are exacting functions. The Employees' Compensation Commission, the Civil Service Commission, and the Post Office Department have each requested an increased amount of medical services which the present facilities are inadequate to supply. It will be necessary to increase the appropriations if the Public Health Service is to meet these requirements.

The percentage of use of its beds is an index of the usefulness of a hospital. The average use in all marine hospitals was 88.47 per cent, excluding only the National Leper Home, which is built for future maximum needs, and Ellis Island, N. Y., which necessarily maintains a large number of vacant beds to meet emergencies arising from the landing of large numbers of immigrants. Including these two special hospitals, the use of beds in all the marine hospitals averaged 86.75 per cent. A general hospital operating at more than 80 per cent of its full capacity is usually considered to be overcrowded; patients must be brought into wards and beds that have not been vacant for a sufficient time to insure necessary cleaning and sterilization. The staff in such a hospital is usually overworked, although overcrowding often permits a low per diem cost. According to a recent survey under the auspices of the Council of Social Agencies, New Orleans, the degree of use of hospital beds in representative cities ranged from 62.4 per cent in Milwaukee and 63.4 per cent in New Orleans to 75.6 per cent in Detroit and 81.4 per cent in Canton, Ohio.

The nature of disabilities treated in the marine hospitals is evidenced in a measure by the character and number of surgical operations, which included 204 amputations, 546 appendectomies, 729 for repair of fractures, 1,208 for hernia, 40 gastroenterostomies, and 1,720 tonsillectomies.

GROUP OF HOSPITALS	HOSPITAL		COST PER PATIENT DAY				
	NO.	LOCATION	RELIEF DAYS	TOTAL	SALARIES	FOOD	OTHER
GENERAL	1.	Baltimore, Md.	57,315	3.35	2.10	.60	.65
	2.	Boston, Mass.	51,328	3.59	2.05	.64	.90
	3.	Buffalo, N. Y.	26,192	3.55	2.16	.50	.89
	5.	Chicago, Ill. (a)	45,871	4.44	2.21	.69	1.54
	6.	Cleveland, Ohio	27,094	4.47	2.92	.54	1.01
	7.	Detroit, Mich.	24,426	4.14	2.52	.59	1.03
	8.	Evansville, Ind.	15,033	3.34	2.13	.55	.66
	10.	Key West, Fla.	8,786	5.04	2.66	.74	1.64
	11.	Louisville, Ky.	13,724	4.85	3.15	.63	1.07
	12.	Memphis, Tenn.	17,213	3.64	2.13	.58	.93
	13.	Mobile, Ala.	27,554	3.77	2.27	.60	.90
	14.	New Orleans, La.	116,952	3.04	1.84	.57	.63
	15.	Pittsburgh, Penna.	20,716	3.98	2.51	.57	.90
	16.	Portland, Me.	19,181	3.65	2.04	.65	.96
	17.	Port Townsend, Wash.	31,811	3.34	1.94	.63	.77
	18.	St. Louis, Mo.	22,576	4.04	2.28	.52	1.24
	19.	San Francisco, Calif.	100,977	3.74	2.13	.73	.88
	20.	Savannah, Ga.	33,746	4.00	2.42	.62	.96
	21.	Stapleton, N. Y.	98,749	3.89	2.39	.53	.97
	22.	Vineyard Haven, Mass.	8,657	3.57	2.02	.67	.88
	43.	Ellis Island, N. Y.	121,793	4.08	1.95	.70	1.43
	70.	New York, N. Y. (b)					
	82.	Norfolk, Va.	63,669	3.97	2.43	.65	.89
	Per diem cost for General hospitals			3.77	2.18	.62	.97
	Total relief days		953,363	Cost $3,594,178.51			
TUBERCULOSIS SANATORIUM	9.	Fort Stanton, N. M.	81,683	3.45	1.35	.83	1.27
				Cost $ 281,806.35			
LEPROSARIUM	66.	Carville, La.	95,565	3.73	2.24	.56	.93
				Cost 356,457.45			
ALL	Per diem cost for all hospitals			3.75	2.13	.63	.99
	Relief days for all hospitals		1,130,611	Total Cost $4,232,442.31			

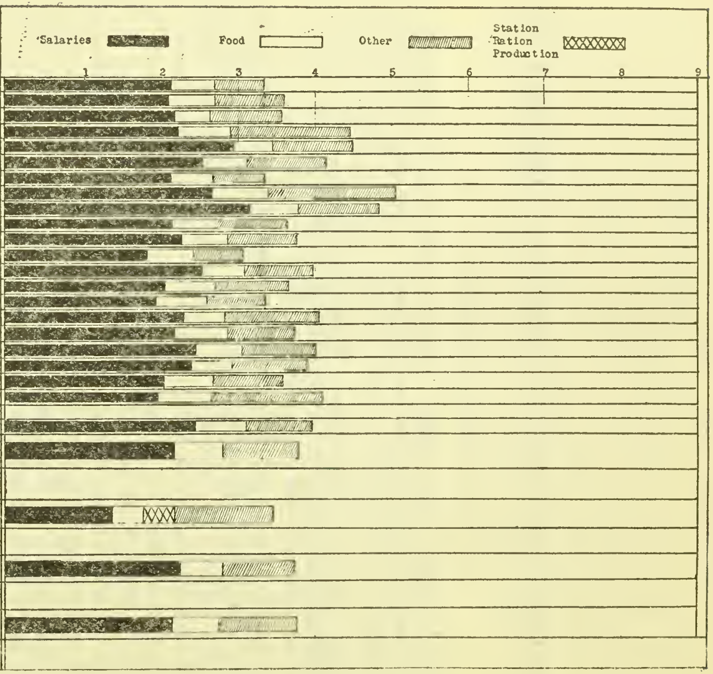


FIG. 1.—Average per diem cost of in-patient relief, United States marine hospitals, fiscal year 1927

INCREASE IN OUT-PATIENT FUNCTIONS

The outstanding feature of relief operations during the year, and one showing the trend of developments, is the increase in out-patient functions, resulting not only from lack of facilities in the marine hospitals, which makes it necessary sometimes to restrict admissions, but from an increasing demand at the out-patient offices for timely treatment and physical examinations to forestall the results of incipient disease and make hospital treatment unnecessary. American seamen and the other beneficiaries of the Public Health Service have learned, as have other citizens, the wisdom of timely prevention. The owners and operators of American vessels are also becoming each year more alert in the selection of healthy employees and more insistent upon the treatment of minor diseases among their personnel. The out-patient offices in New York City, New Orleans, San Francisco, Seattle, Galveston, Los Angeles, Pittsburgh, Chicago, Cleveland, and other important ports have been improved and enlarged to meet the growth of out-patient work which amounted in 1915 to 68,466 office calls, and in 1926 and 1927 to 572,139 and 632,341, respectively.

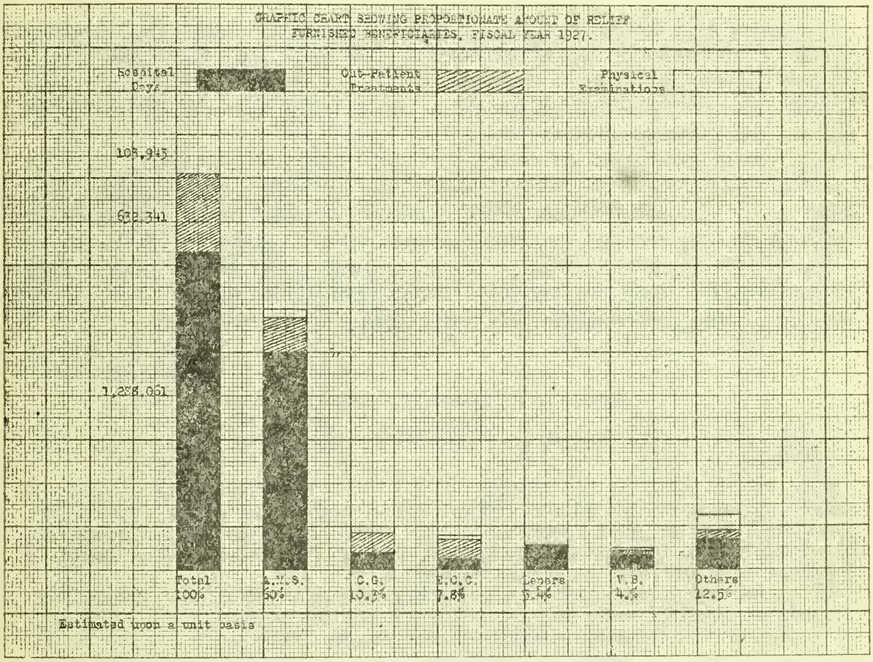


FIG. 2.—Classes of beneficiaries and relief

Requests from seamen who have been treated in marine hospitals, or from their legal representatives, for abstracts of clinical records are being received in increasing and, from an administrative viewpoint, alarming numbers. There is an increasing tendency for seamen to institute procedures to recover damages from shipowners for injuries or other disabilities attributable to their employment.

It is necessary for the bureau to ascertain that abstracts, especially when containing confidential information, have been authorized in each instance by the patient concerned or by a court order or other competent authority. The correspondence necessary to secure the attestations and the preparation of abstracts at the marine hospitals makes heavy demands upon the time of medical officers and the clerical staff.

The bureau passed upon 3,613 requisitions received from marine hospitals and other relief stations and approved 2,028 proposals for monthly, quarterly, and annual supplies. It also negotiated 954 contracts for services at various ports as part of the necessary relief functions.

Failure of the Second Deficiency Bill

Unusual and trying conditions arose late in the fiscal year because of the fact that the second deficiency bill failed to pass the Senate before the Congress adjourned on March 4, 1927. Funds amounting to $89,451, intended to replace those used in the medical examination abroad of intending immigrants, were thus lost.

The catastrophe of a threatened deficiency was averted only by considerable sacrifice and by measures, approved March 22, 1927, that will necessitate abnormally heavy expenditures immediately after June 30, creating a draft on the 1928 appropriation not previously contemplated. The following circular letter was then issued, in view of the fact that a deficit could not be incurred in the fiscal year 1927, for the routine relief operations of the service:

March 23, 1927.

HOSPITAL DIVISION CIRCULAR NO. 249

To Medical Officers in Charge, U. S. Marine Hospitals, and Second-Class Relief Stations:

The second deficiency bill having failed to pass the Senate before Congress adjourned on March 4, 1927, a very grave situation has arisen. There is a threatened deficiency of $89,451, the amount of the year's expenditures for the examination of immigrants abroad, out of the appropriation, "Pay of personnel and maintenance of hospitals, P. H. S."

It is contrary to law to incur a deficiency, and it is necessary, therefore (*a*) to curtail expenditures by limiting the purchases of supplies of every character to urgent needs, notwithstanding stocks may become exhausted by June 30, (*b*) to defer upkeep and repairs of equipment, and (*c*) to allow vacancies, except in key positions, to remain unfilled until July 1.

You are directed to economize in station purchases by omitting articles not absolutely essential and restricting purchases to the absolute minimum quantity needed to last until June 30. The purchase of dry groceries (sometimes purchased in normal times in bulk), coal, fuel oil, forage, wood, gasoline, oils, grease, janitor and laundry supplies, antitoxins, vaccines, and other biological supplies, salvarsan and other arsenicals, insulin, soft rubber articles, and other similar supplies must be so limited that no stock will remain on June 30.

All vacancies occurring in positions not vital to the care of patients and the operation of hospitals should be left unfilled until July 1. The bureau understands that medical officers, nurses, engineers, firemen, cooks, laundry employees, and certain others are absolutely essential, but desires that vacancies in positions less vital should be left unfilled, except under unusual circumstances. Vacancies in essential positions should be left unfilled whenever, in the discretion of the medical officer in charge, such measure is practical.

The bureau has already discontinued purchasing equipment of all kinds, as well as supplies, which may be deferred until July 1, and medical officers concerned will understand the necessity of conducting the public business in the manner best calculated to preserve the highest efficiency in spite of serious handicaps.

This order is immediately effective. It is believed that some saving may be effected in the allotments of the present quarter. Allotments for the fourth quarter will be reduced below normal at every station, but must not be overobligated. If, as an alternative to other economies, or in addition thereto, it is necessary to discontinue personnel, recommendations to this end should be promptly made.

Allotments for the first quarter of the next fiscal year will necessarily be increased beyond normal to replenish depleted stocks of supplies, effect neglected repairs, and restore deficient equipment.

In order that funds may be controlled as closely as possible, medical officers in charge are directed to telegraph (night letter) on the last day of each month the total (one sum) of their encumbrances.

You are directed to acknowledge receipt of this letter.

Respectfully,

H. S. Cumming,
Surgeon General.

At the same time that the above letter was issued, State health officers were notified that further transfer of lepers to the National Leper Home at Carville, La. (U. S. Marine Hospital No. 66), would be postponed until after July 1. The transfer of tuberculous patients from seaports to the marine hospital at Fort Stanton, N. Mex., was also suspended to reduce or rather postpone travel expense. These drastic measures were effective in allowing the service to operate within its appropriation. It was, however, necessary to place orders before the end of the fiscal year, for delivery on or immediately after July 1, of equipment and supplies costing approximately $70,000, chargeable to the 1928 appropriation, that, under normal circumstances, would have been purchased and placed in use during the fourth quarter of the fiscal year ending June 30, 1927.

The result of accumulated neglect to hospital grounds and buildings, due to the depletion of personnel in the closing months of the year, will be corrected after July 1 by augmenting the normal station personnel with temporary laborers and other employees to restore normal conditions. The unusual expense of accumulated travel involved in deferred transfers of lepers and others will impose a further tax upon the 1928 appropriation, to augment which a deficiency appropriation is evidently necessary.

Testing of Clinical Thermometers

In the United States only the States of Connecticut and Massachusetts and the city of New York have laws insuring the accuracy of clinical thermometers placed on sale. To insure correctness, all clinical thermometers purchased by the service are tested through the courtesy of the Bureau of Standards before being accepted. The following shows the results of tests and the prices paid for clinical thermometers since 1925, when the practice was instituted:

Year	Number of thermometers tested	Number rejected	Number accepted	Price of each
1925	5,401	445	4,956	$0.249
1926	7,228	1,129	6,099	.273
1927	4,100	912	3,188	.37

Of the 912 rejected during the past year, 742 were not accurate, 54 had defects in construction, such as air in the bulb, broken mercury columns, cracked glass, etc., 6 were too difficult to shake down to normal reading, 75 failed to give constant readings in repeated test, 24 were retreaters, failing to hold the maximum reading, and 11 were rejected for miscellaneous reasons.

Radio Medical Advice

The volume of messages exchanged between ships at sea and the marine hospitals indicates that the masters of American vessels are alert to take advantage of modern facilities. The greatest diversity of cases has been presented, including contagious diseases and suspected contagion, poisoning, heat stroke, insanity, and accidents of all degrees of severity. The Assistant Secretary of the Treasury, in a memorandum to the Surgeon General, commenting upon a file of radio messages between ships at sea and the marine hospitals, stated:

> The attached file is an excellent example of what progress has been made by virtue of the radio. It speaks well for your department that you have taken advantage of the means at hand to improve the service.

Dentistry

A patient admitted to one of the large marine hospitals is given a thorough examination by the dental officer and necessary routine dental treatment, such as fillings, prophylactic measures, extractions, etc., so far as the facilities of the station will permit. Prosthetic appliances, such as dentures and bridges, are constructed only at stations where full-time dental officers are on duty, and not at the smaller marine hospitals or second and third class stations. All cases of fractured jaw are sent to the hospital dental officer for treatment and splints.

To the dental officers is accorded much credit for the marked reduction in the average duration of treatment of patients in marine hospitals. Many chronic forms of arthritis have been found curable through the elimination of focal infections in the mouth, and the causes of obscure illnesses are sometimes determined and removed. A correction of septic conditions in the mouth has often successfully turned the scale in instances of critical illness. Few classes of industrial workers are in greater need of dental treatment or advice than the American merchant seaman, whose long voyages and short stays in ports, as well as his well-known habits of carelessness in all matters relating to personal hygiene, have contributed to a deplorable state of oral hygiene.

The combined treatment rendered by the 30 full-time dental officers and 2 part-time dentists, but not including that of the 31 contract dentists on duty at second and third class stations, is as follows:

Operative treatments		113,958
Prophylactic treatments	hours	5,368
Vincent's stomatitis treatments	do	1,635
Periodontoclasia (pyorrhea alveolaris treatments)	do	1,602
Extractions	teeth	26,467
Root canals filled		336

Other fillings		19, 116
Porcelain crowns and gold crowns		827
Prosthetic appliances		2, 172
Fractured jaws	hours	330½

The total cost to the Government of the above amounted to $143,231.58, or 0.039 cents per hospital patient daily, which includes all salaries, supplies, and equipment. If rendered by contract dentists at the prescribed fees, the cost would have been $399,749.61. No additional dentists were placed on duty, owing to lack of funds, although it was necessary to remove dental officers from some hospitals to meet new and urgent requirements of the Coast Guard.

All dental equipment has now been standardized, and identical outfits supplied each station where a dental officer is on duty, thus facilitating the furnishing of expendable supplies and broken or worn parts of machines. Expendable dental supplies averaged only $19.83 per month for each dental officer on duty, an amount considerably less than required by civilian dentists for equal services, due to the standardization of materials and the purchase in sufficient quantities to insure low prices.

Senior Dental Surg. (R) C. T. Messner is in charge of all dental operations in the field and in the bureau.

INSTRUCTION IN FIRST AID AND SHIP SANITATION

Ships' officers and candidates for licenses on American vessels were given instruction in first-aid and ship sanitation, as in previous years, at 45 relief stations in the following places, all of which were designated at the request of the Steamboat Inspection Service:

Albany, N. Y.
Astoria, Oreg.
Baltimore, Md.
Bangor, Me.
Boston, Mass.
Buffalo, N. Y.
Charleston, S C.
Chicago, Ill.
Cincinnati, Ohio.
Cleveland, Ohio.
Detroit, Mich.
Duluth, Minn.
Evansville, Ind.
Fort Stanton, N. Mex.
Galveston, Tex.
Grand Haven, Mich.
Honolulu, Hawaii.
Jacksonville, Fla.
Juneau, Alaska.
Louisville, Ky.
Marquette, Mich.
Memphis, Tenn.
Milwaukee, Wis.
Mobile, Ala.
New Haven, Conn.
New London, Conn.
New Orleans, La.
New York, N. Y.
Nashville, Tenn.
Norfolk, Va.
Oswego, N. Y.
Philadelphia, Pa.
Pittsburgh, Pa.
Portland, Me.
Portland, Oreg.
Port Huron. Mich.
Providence, R. I.
Savannah, Ga.
San Francisco, Calif.
San Juan, P. R.
San Pedro, Calif.
Seattle, Wash.
St. Louis, Mo.
Tampa, Fla.
Toledo, Ohio.

A total of 1,469 were instructed in the principles of first aid and 2,393 were examined, of whom 2,201 were passed as proficient. Of the 192 who failed to pass, 58 had received instruction in the principles of first aid and 134 attempted to pass the examinations with only a textbook knowledge of the subject. Successful applicants are certified to the Steamboat Inspection Service and furnished a certificate of proficiency. The course of instruction has been fairly well standardized, although methods employed at various stations differ considerably. Service medical officers devoted an aggregate of 3,820 hours to this work. The following excerpt from the annual report of the medical officer in charge, United States Public Health Service Relief Station No. 310, Port Huron, Mich., shows typical methods:

> During the month of January the class of 29 applicants was given instruction and practical demonstration [in first aid and ship sanitation] in the Federal courtroom on the second floor of the Federal building. This class assembled daily between the hours of 9 and 4. This period was divided into lecture demonstrations and group study. One week was required to cover the subject, after which time the members of the class were examined individually. It is worthy of note that 27 of the 29 instructed passed creditable oral examinations upon the subject.

Ship's Medicine Chest

At the request of the Department of Commerce the Public Health Service has prescribed a standard list of contents for the chest of medicines required aboard certain American ships. The American Marine Standards Committee also requested a standard list of medicines and surgical supplies for minimum requirements aboard ocean-going vessels. The lists, three in number, to meet the needs of vessels of different sizes, were published in the United States Daily, August 22 and 23, 1927. The Itinerant Conference on the Health of Merchant Seamen held at Oslo, June 28, 1926, failed to adopt a standard ship's medicine chest or handbook of medical instructions for international use.

United States Employees' Compensation Commission

More than one-fifth of all beneficiaries are civilian employees of the United States injured in line of duty. Owing to the growth of the Government's business and the increasing tendency of employees to apply for compensation for injury, and also to the fact that it has been found desirable to encourage Government employees to apply promptly for treatment of minor injuries, there is an increase, from year to year, of medical services rendered to the Employees' Compensation Commission.

In her annual report for 1926 the chairman of the Employees' Compensation Commission comments in part as follows:

> Perhaps the most forward-looking feature of the medical situation is the entirely admirable way in which the United States Public Health Service has succeeded in cooperating with the commission. In line with the earnest effort toward economy on the part of the Federal Government, the commission has been able to utilize the available services of the Public Health Service relief stations and hospitals to the extent that by far the major proportion of all its beneficiaries obtain treatment through this single governmental medical organization. It is only regretted that the services of the Public Health Service can not be extended to the fullest geographical requirements of the commission. For instance, west of the Mississippi River there are only two general Public Health Service hospitals ,and the lack of adequate Government medical facilities in this great area is a serious handicap to the commission.
>
> Not only from the aspect of economy and real coordination is the commission actually indebted to the Public Health Service, but commendation is freely extended in regard to the character of medical work furnished. Both the

> hospital and dispensary services include every medical facility utilizable with advantage in each case. Specialists have always been available whenever indicated, and a full staff of ophthalmologists, orthopedic surgeons, and neuropsychiatrists, with every facility for examination and diagnosis, are included on each hospital staff. Similar work done in civilian hospitals could have been obtained only at a great cost, but civilian hospitals or private physicians would not have had sufficient experience with compensation work to render as satisfactory reports of physical findings and examinations. In a review of the current year's cases treated at the marine hospitals, as compared with claimants necessarily placed under the care of civilian hospitals, it is evident that services and facilities were rendered by the Public Health Service, taking into consideration the departments for physiotherapy, hydrotherapy, and vocational therapy, if obtainable, that could only have been supplied at a prohibitive cost elsewhere. Furthermore, few, if any, civilian hospitals or physicians have been able to render in the first instance reports necessary and essential in the proper consideration of a claim from the compensation standpoint such as the Public Health Service routinely furnishes. * * *
>
> In addition to the above, the Public Health Service has rendered signal service to the commission since its inception through the detailing of two or more full-time medical officers for administrative and advisory medical work with the commission. The Surgeon General has further appointed a permanent board of especially qualified medical officers to which the commission refers questions of medical policy and certain of its most difficult and delicate medical problems in connection with individual claims.
>
> Lastly, it has recently been made possible for the commission to utilize the services of Public Health Service officers in the field for medical surveys and investigations of the most unusually difficult character. Through this facility the commission has been able to solve during the last year problems in connection with claims which no amount of correspondence or investigation by nonmedical experts could have coped with.

The longshoremen's and harbor workers' compensation act, approved March 4, 1927, greatly increases the responsibilities and duties of the Employees' Compensation Commission, as there are approximately 400,000 longshoremen and harbor workers throughout the United States. Although the administration of this act by the commission is not expected materially to increase the number of patients requiring hospital care, it will increase the requirements for physical examinations and medical surveys. The chairman of the commission, in a letter dated June 21, 1927, inquired whether the Public Health Service was prepared to furnish the additional medical facilities to comply with the requirements of this act and stated in part as follows:

> Probably well over 90 per cent of the territory covered by the activities of longshoremen and harbor workers is within an area which will make it advisable for our deputy commissioners to seek the local facilities of the Public Health Service to perform referee examinations upon such cases as may be involved in medical dispute.
>
> * * * Practically every sea, lake, and river port of any considerable tonnage will have numerous longshoremen cases involving impartial medical examinations. Certainly every central office of the deputy commissioners may be expected to call upon the local Public Health Service medical officers for frequent assistance and advice.
>
> * * * In view of a directly impending and very material increase of medical work under the new longshoremen's act, particularly in respect to detailed impartial medical services and the assured necessity of expert medical advice which the local deputy commissioners will continually require. I wish to ascertain whether this necessary help may be forthcoming after July 1, 1927, when the new act goes into effect, to meet the indications as outlined above.

It was necessary to state in reply to the above inquiry that the furnishing of the desired additional facilities will depend upon approval of an increase in the appropriations of the Public Health Service.

Surg. E. C. Ernst is assigned as medical director of the United States Employees' Compensation Commission.

UNITED STATES COAST GUARD

The personnel of the Coast Guard averaged 10,984 officers and men, an increase of 1,145, or 11.62 per cent, over the preceding year. Further increases are anticipated, and, hence, a corresponding increase in the amount of medical service required next year. The character and comparative amounts of medical services furnished in recent years is shown in the following table:

Numerical strength of Coast Guard and medical services given

Year	Number of Coast Guard personnel	Hospital days	Out-patient treatments	Physical examinations
1923	4,684	41,681	32,530	4,207
1924	4,896	36,504	45,857	7,008
1925	7,077	60,336	90,494	13,394
1926	9,839	71,799	125,226	19,061
1927	10,984	76,564	155,977	18,787

Average amount of medical service per person

Year	Hospital days	Out-patient treatments	Physical examinations
1923	8.9	6.7	0.9
1924	7.6	9.4	1.5
1925	8.5	12.8	1.9
1926	7.3	12.7	1.9
1927	6.9	14.2	1.7

Twenty-four medical and dental officers were assigned to exclusive duty with the Coast Guard and 99 local physicians employed under contract at places remote from marine hospitals and other relief stations. Emergency relief, including hospital care, was secured in a large number of instances in both domestic and foreign ports under circumstances making it impossible to utilize Government facilities, the expense in each instance being assumed by the Public Health Service. Medical supplies were furnished to all ships and shore stations of the Coast Guard, including standardized equipment for thirty-three 125-foot off-shore patrol boats and for the *Northland*, a new cutter which was provided with a very complete outfit, because of the size of her personnel, the length of her cruising radius, and the relief that this vessel will be called upon to furnish to Alaskan natives and others on the Arctic cruise. The sick bay, with accommodation for bed patients, operating equipment, dental unit, X-ray apparatus, dispensary, and laboratory, constitutes the most complete installation of the kind ever placed on a Coast Guard cutter. The medical and dental officers on cruising cutters are frequently called upon to assist Alaskan natives and others in serious emergencies, and the sight of a cutter approaching a remote Alaskan port is a signal for collecting the sick and injured. Wireless calls for advice or assistance are frequently received in medical emergencies from ships at sea, and sometimes a seaman is taken off a vessel having no doctor aboard. The dental officer has been continued on duty at the Coast Guard Academy and a dental unit installed at the Atlantic City base. Because of economies necessitated by the failure of the second deficiency bill the Unalaska dental office was left unmanned, with some resulting hardship to the personnel of six cutters basing at that port during the summer seal patrol.

Surg. W. W. King is assigned to duty as medical aid to the commandant at Coast Guard headquarters.

United States Veterans' Bureau

As in all previous years since the World War, the facilities of the marine hospital and out-patient offices have been available for patients of the United States Veterans' Bureau. The bed capacities of several of the hospitals have been increased to meet the requirements in ports where there is no other Government hospital, and the character of the medical service has, in several instances, been modified to comply with the requirements of this class of beneficiaries. At Portland, Me., a contract has been let amounting to $18,300, to convert the doctor's quarters on the first floor of the marine hospital to medical uses and to make other alterations that will increase the capacity to 64 beds and otherwise improve the facilities. On the average, 23.5 patients of the United States Veterans' Bureau have been treated daily at this hospital during the year, constituting 56 per cent of the total rated capacity.

The marine hospital at Pittsburgh has treated daily, on the average, 40 patients of the United States Veterans' Bureau, or 66 per cent of its rated capacity. The marine hospitals at Louisville, Ky., Detroit, Mich., Cleveland, Ohio, and Buffalo, N. Y., have admitted considerable numbers of patients of the United States Veterans' Bureau, the total number of which in all marine hospitals averaged 189 throughout the fiscal year.

At the request of the Director, United States Veterans' Bureau, the planned capacity of the proposed new marine hospital at Cleveland has been increased to 250 beds to accommodate 100 patients of the United States Veterans' Bureau, thus satisfying the demands of the American Legion and others locally interested in adequate hospital provisions in Cleveland for World War veterans. The entire top floor of the main hospital building will be devoted to a neuropsychiatric unit. The proposed new marine hospital at Detroit has also been planned at the request of the Director, United States Veterans' Bureau, to provide the desired facilities in that city. It is expected that the construction of these two hospitals will be begun shortly. The capacity of the marine hospital at Buffalo, N. Y., was increased to 71 during the year, and plans and specifications have been prepared by the supervising architect to remodel this hospital to accommodate 18 additional beds and increase and improve the facilities.

Construction and Repair of Buildings

At the marine hospital in Chicago, construction was begun of quarters for the medical officer in charge, 2 junior medical officers, 2 pharmacists, 21 nurses, and 44 attendants; the rehabilitation of the hospital and the modernization of its mechanical equipment were also undertaken at an aggregate cost thus far approved of $334,126. An excellent site has been secured for the new marine hospital at Cleveland, and plans are now in course of preparation by the supervising architect for this hospital, as well as the new marine hospital at Detroit and for new quarters for the medical officer in charge at Savannah.

Improvements were made during the year from special appropriations approved March 2, 1926, as follows:

Stapleton, N. Y.: Road repairs; repairs and painting of attendants' quarters and surgical unit	$5,700
New Orleans, La.: Roadways, walks	8,000
Carville, La.: Miscellaneous repairs, and extension to administration building	32,500
San Francisco, Calif.: Repairs to gutters and downspouts	2,000

Improvements now under way from special appropriations approved January 26, 1927, include the following:

Key West, Fla.: For remodeling and painting, etc	$6,000
Stapleton, N. Y.: For improving existing facilities	23,000
St. Louis, Mo.: For improving existing facilities	10,000

At Baltimore the roadways were extended and remodeled, and new fireproof floor, railing, steps, etc., were installed in the connecting corridor. At Boston, roofing on certain buildings was replaced, roadways were rebuilt, and new steam piping was installed. At Memphis a new steel smokestack was erected. At Port Townsend the exterior of all buildings was painted. At St. Louis, repairs were made to porches, walks, doors, stairs, etc., of all wards, and new hot and cold water pipes were installed; private rooms for the treatment of postal employees and beneficiaries of the Employees' Compensation Commission are being provided. At Carville, La., a small detention building and new garage were constructed. At the Hudson Street marine hospital a new dental clinic and new X-ray equipment were installed. At Norfolk the hospital building, nurses' home, and attendants' quarters were made waterproof, and a solarium was constructed on the hospital roof.

In joint recommendations made by the Secretary of the Treasury and the Postmaster General to the Speaker of the House of Representatives (Document 710, dated February 14, 1927) for allocating public buildings to be constructed under the provisions of the public buildings act approved May 25, 1926, the following were included: New marine hospitals at San Francisco, New Orleans, and Galveston, respectively, and a building for the out-patient office at Philadelphia. In this document it is stated that a nation-wide survey cited the need for $12,000,000 for marine hospitals and quarantine stations of the Public Health Service. In the estimates transmitted by the President (Document 740, dated February 18, 1927) for appropriations under the public buildings act, for the first year's program the following amounts were included: New Orleans, $330,000; San Francisco,

$150,000; and Philadelphia, $75,000. The appropriations, however, have not yet been made by the Congress.

The present need for new construction and of major requirements for which legislation is required include the following, which are intended principally to replace inflammable buildings with wards of fire-resisting materials, to enlarge inadequate marine hospitals, construct hospitals in ports where the same are now lacking, and, as a measure of economy, to provide quarters for personnel, thus saving large sums of money that are now spent for rentals or for increased compensation paid in lieu of quarters:

Stapleton, N. Y.: New construction, remodeling, replacement, etc., to increase capacity to 500 beds.

Baltimore, Md.: Fireproof wards to replace old frame buildings, extension to nurses' quarters.

Carville, La. (National Leper Home): Infirmary, quarters, patients' recreation building, additional water supply.

Seattle, Wash.: New hospital of 200-bed capacity.

Fort Stanton, N. Mex.: Hospital ward, officers' quarters, attendants' quarters, power plant.

Louisville, Ky., Mobile, Ala., Pittsburgh, Pa., Buffalo, N. Y., and Portland, Me.: Nurses' home, attendants' and officers' quarters.

SUPPLIES AND SURPLUS PROPERTY

Although the amount and variety of surplus property taken over from the War Department at the close of the war has dwindled, all requisitions received from marine hospitals and other relief stations are routinely cleared through the supply station at Perry Point, Md., before any article is approved for purchase. Stocks of medical and surgical supplies purchased in quantities are also deposited at this station as a measure of economy and convenience. The handling cost at Perry Point, based on the value of supplies received and shipped and the cost of labor and materials consumed, amounted to $0.0625 on the dollar.

Surplus supplies and equipment originally received from the War Department and the United States Veterans' Bureau were disposed of during the year to the agencies shown below, by transfer upon approval of the chief coordinator, amounting in inventory value to $133,014.63:

War Department: Mattresses, drugs, surgical instruments, bake ovens, coffee urns, and kitchen equipment	$48, 152. 14
American Red Cross, Mississippi flood relief: Mattresses, clothing and camp equipment, amounting to 9 carloads	62, 061. 57
District of Columbia, Metropolitan Police Department: Motor-cycle supplies and electric motors	1, 153. 53
Department of Interior, Bureau of Indian Affairs: Hospital supplies	617. 71
Department of Justice, United States Penitentiary: Surgical instruments and hospital supplies	21, 029. 68

It has been the practice of the service for some years to make annual contracts for biological supplies and arsenicals and to authorize field officers to purchase them as needed direct from the contractors. This plan has been quite satisfactory, affording field officers a prompt means of obtaining remedies of recent manufacture and known potency. It has proved economical, since it has relieved any tendency to accumulate stocks of remedies which are more or less unstable.

Recently this has been extended to include other important items such as X-ray films, ether for anaesthesia, nitrous oxide, oxygen and ethylene gases, adhesive plaster, medical soft rubber goods, insulin, dry-cell batteries, porcelain teeth and facings, and orthopedic and prosthetic appliances (with limitations).

Associate Medical Purveyor C. H. Bierman has been continued in charge of the supply station, Perry Point, Md.

ABSTRACTS OF REPORTS FROM RELIEF STATIONS

A brief summary is given below of certain representative and special marine hospitals and relief stations. The details of annual reports from these and other relief stations are given in tabulated form on page 268.

Marine Hospital No. 1, Baltimore, Md.—Surg. J. W. Trask in charge. The demands made upon this hospital have been increasing year by year. It is seriously in need of increased space for patients and additional quarters for personnel. The hospital is filled to capacity at practically all times, and during many months of the year patients requiring hospital care are treated as out-patients. The facilities available for tuberculous patients, both white and colored, are especially inadequate, as are those for surgical patients. The inflammable one-story frame ward buildings should be replaced by three-story brick structures. Recommendations to that end and for additional quarters for nurses and other personnel have been made, with the expectation that the needs may be included in the Government's building program.

The trend of work in recent years is shown below:

Fiscal year	1925	1926	1927
Total number patients receiving hospital treatment	1,231	1,389	1,633
Number of patients died	37	43	48
Total number of days of hospital treatment furnished	58,758	54,909	57,315
Number of out-patients treated	4,204	4,924	5,767
Number of out-patient treatments furnished	14,288	19,793	23,521
Number of physical examinations	1,999	2,803	3,314
Number of X-ray exposures	2,244	2,342	3,549
Number of patients X-rayed	1,095	1,203	1,730
Number of clinical laboratory examinations	4,754	5,075	8,955
Dental in-patients	312	288	371
Dental in-patient treatments	830	813	1,215
Dental out-patients	498	622	738
Dental out-patient treatments	1,089	1,667	2,758

This hospital has been approved by the American Medical Association for the training of internes.

Marine Hospital No. 2, Boston, Mass.—Senior Surg. J. O. Cobb in charge. There was an increase of approximately 200 hospital patients over last year's transactions; 1,657 patients were admitted, of which number 793 were American merchant seamen, 48 foreign seamen, 567 United States Coast Guard men, 64 patients of the Employees' Compensation Commission, and 132 detained aliens sent to the hospital by the United States Department of Labor. Four insane patients were committed to State institutions. An outstanding item of interest is the fact that only one case of pneumonia was admitted during the year and no cases of pneumonia developed in the hospital among bed patients. Only 44 deaths occurred. An unusually large number of patients with follicular tonsillitis were admitted, and the disease was contracted by a considerable number of the employees.

Marine Hospital No. 3, Buffalo, N. Y.—Surg. J. T. Burkhalter in charge. The normal capacity of the hospital, which is insufficient to meet the needs of the station, was increased from 60 to 71 beds by displacing 10 attendants who, with a compensating increase in salary, were required to find living accommodations in the city. The daily average number of patients throughout the year was 71.7. It is anticipated that the supervising architect will shortly arrange for further increasing the capacity of the hospital to 89 beds, chiefly for the accommodation of patients of the United States Veterans' Bureau, out of the appropriation "Remodeling and enlarging public buildings."

The hospital has thoroughly equipped and manned dental, dietetic, and physiotherapy departments. The clinical laboratory is adequate for routine work, but not for complicated procedures. The X-ray equipment is inadequate on account of the increased number of patients and should be replaced with more modern apparatus.

Marine Hospital No. 5, Chicago, Ill.—Surg. M. H. Foster in charge. The admirable location of this hospital will be further improved when the projects of the city of Chicago for building a boulevard and park between the reservation and the lake are completed. The hospital building was temporarily closed on May 1 for extensive general repairs, including a renewal of the plumbing and heating systems. During the winter, the capacity of the institution was taxed to the utmost and it was necessary to install extra beds in the smoking rooms and corridors. A very large amount of medical work is performed for the Employees' Compensation Commission. First-aid stations are maintained in the Federal Building post office and the Van Buren Street post office for this purpose.

This hospital has been approved by the American Medical Association for the training of internes.

Marine Hospital No. 6, Cleveland, Ohio.—Surg. L. P. H. Bahrenburg in charge. This hospital, which was opened in 1852, has rendered splendid service to merchant seamen for 75 years and to veterans of three wars—the Civil War, the Spanish-American War, and the World War. Plans have been completed for a new marine hospital to replace the present buildings, and a site has been secured at Fairmount Boulevard and East One hundred and twenty-fourth Street, on elevated ground overlooking Lake Erie. The new institution, with a capacity of 250 beds, will fulfill the emergency needs of the United States Veterans' Bureau, in addition to those of other beneficiaries of the service. A portion of the old marine hospital reservation, acquired in 1837 at a cost of $12,000, has been disposed of by public sale for $1,954,000, part of which will be devoted to the construction of the new buildings.

An evidence of the rapid growth of the work of this port is shown in the following comparison of transactions for the fiscal years 1923 and 1927, respectively:

	1923	1927	Increase in 1927 over 1923
			Per cent
Number of patients in hospital at close of year	55	77	44
Number of patients admitted during the year	806	1,099	31.3
Number of days hospital relief furnished	23,226	27,223	17
Number of out-patients treated	1,088	3,147	272
Number of times out-patient relief furnished	3,206	8,075	152
Number of physical examinations	1,411	2,061	46
Number of clinical laboratory tests	2,641	8,321	215

Marine Hospital No. 7, Detroit, Mich.—Surg. J. S. Boggess in charge. A 5-acre tract for the proposed new marine hospital was secured under Public Act No. 244, Sixty-ninth Congress, transferring the lighthouse property at Windmill Point to the Treasury Department. Through the courtesy of the Detroit city engineering department, the filling in of submerged portions of this property is in progress, without expense to the Government. The new institution is planned to contain 125 beds, which will also meet emergency requirements of the United States Veterans' Bureau in this city. The hospital was filled to capacity during the year and together with its down-town out-patient office furnished treatment to 1,418 American seamen, 273 patients of the United States Veterans' Bureau, 13 Coast Guard men, 149 patients of the Employees' Compensation Commission, 41 employees of the Lighthouse Service, and 99 other beneficiaries. More than 2,000 persons were given physical examinations requiring a written report, for purposes not connected with medical treatment, of whom 907 were civil-service applicants, 201 merchant seamen, 399 Coast Guard men, 131 applicants for pilot's license, and 345 food handlers on vessels of the Great Lakes. The most frequent causes of rejection here as elsewhere were defective vision, valvular heart disease, and hernia.

Marine Hospital No. 9, Fort Stanton, N. Mex.—Surg. J. W. Tappan in charge. This sanitarium is located at an altitude 6,230 feet above sea level and is reserved for tuberculous merchant seamen and Coast Guard personnel who, after a period of preliminary observation in a marine hospital, are found suitable for transfer. Only ambulatory patients without serious complications or such extensive involvement as to cause serious shortness of breath or unfavorable prognosis are considered suitable for transfer. The climatological record during the year showed 223 clear days, 108 partly cloudy, and only 34 cloudy days.

The station has a reservation of 43 square miles, all under fence. It has a range and dairy herd of more than a thousand animals. It maintains its own power plant, cold storage, bakery, laundry, and fire department. The ration cost during the year averaged 83 cents per day per patient, which is higher than that of other marine hospitals, because of the importance of diet in the treatment of the tuberculous and the large amount of milk, cream, and fresh eggs served. The total ration cost was $104,055.11, of which amount $51,700.33 was credited to the station farm for food supplies—beef, pork, bacon, ham, milk, cream, eggs, and poultry. Potatoes and canned goods are purchased in carload lots.

The capacity of the hospital is 230 patients, and the daily average was 224. The average stay of patients discharged was 464 days, which indicates a considerable degree of satisfaction among patients receiving treatment and illustrates the policy of the Public Health Service to encourage tuberculous seamen to remain until an arrestment is secured or death results. Thirty-three patients died during the year and 120 were otherwise discharged, of whom 16 were apparently arrested, 67 improved, and 37 not improved.

Forty-seven patients were treated by direct heliotherapy, 1,300 such treatments being given for tuberculous laryngitis alone; 1,678 treatments by artificial heliotherapy were given. Artificial pneumothorax was employed for 21 patients, 472 treatments being given; 3 such patients were discharged, having received the maximum benefits after treatment by artificial pneumothorax for 27 months, 21 months, and 45 months, respectively. A full-time dentist was employed and furnished 2,339 sittings, operating an aggregate of 1,908 hours. The station is well equipped with X-ray and clinical laboratory facilities. and gives diversional instruction in rug weaving, reed, leather, metal work, etc. The value of hides and other station products that were sold, including articles manufactured by the patients in the reconstruction department, and food supplies sold to commissioned officers and others, by departmental authority, amounted to $4,487.13, all of which was deposited with the collector of customs. Sixty-eight beef animals were transferred to the National Leper Home (Marine Hospital No. 66) Carville, La.

Marine Hospital No. 11, Louisville, Ky.—Surg. E. H. Mullan in charge. The hospital building is 79 years old. Its capacity, 54 beds, should be increased to keep pace with the growing demands, particularly those of the United States Veterans' Bureau. An additional ward is needed for colored patients; the surgical wards and operating rooms should be enlarged, the space for physiotherapy treatments amplified, and a number of small wards and private rooms provided for terminal cases, tuberculous patients, female beneficiaries, genito-urinary cases, and for the temporary isolation of contagious diseases and mentally disturbed patients. None of these provisions can be carried out unless the personnel now quartered in the main hospital building is removed and placed in quarters, which should be built on the reservation. A skeleton house staff has been assisted by a full corps of medical consultants selected from private practitioners in the city. Difficult X-ray photography is handled by contract, as is the administration of radium. The clinical laboratorian is also on a contract status. The acting chief nurse acted as dietitian, purchasing the subsistence supplies and supervising kitchen and dining-room employees.

Through the courtesy of the board of park commissioners of the city of Louisville, flowering bulbs were supplied for the grounds, and 24 additional trees were set out on the reservation without expense to the Government.

Marine Hospital No. 12, Memphis, Tenn.—Surg. R. L. Allen in charge. The hospital operated at normal capacity, and the outpatient service was active. Patients, consisting chiefly of American merchant seamen and injured Government employees, are practically all acute cases, and the hospital has a large turnover. There is an excellent consultant staff, and treatment has been maintained at a satisfactory standard. The recent flood conditions in the Mississippi have had no appreciable effect upon the number of patients admitted or the character of their disabilities.

Marine Hospital No. 13, Mobile, Ala.—Surg. Friench Simpson in charge. This hospital building, although nearly 90 years old, and occupied during the Civil War, first by Confederate and then by Union forces, is in an excellent state of preservation and repair. Originally housing the entire operative personnel, its bed capacity for patients has been increased from time to time by converting quarters into wards. It now has a capacity of 90 beds, utilizing porch space, although the personnel is housed, at considerable inconvenience, off the reservation. The tropical storm in September, 1926, did some damage to the roof, cornice, and other portions of the building.

With the assistance of a housekeeper, the acting chief nurse functions also as dietitian. The clinical laboratory made 6,034 examinations. The physiotherapy department gave 7,023 treatments to 340 patients, by massage, electrotherapy, thermotherapy, and exercise. Of the 2,324 out-patients, 1,647 were American merchant seamen. Of 3,403 persons who were given physical examinations for purposes not related to treatment, 3,183 were seamen. The extensive municipal dock developments in this city are expected greatly to increase the shipping activities of the port and consequent demands upon the hospital. Seven cases of mild smallpox appeared among patients under treatment, making it necessary to initiate routine vaccination of all admitted.

Marine Hospital No. 14, New Orleans, La.—Surg. W. C. Rucker in charge. In spite of the fact that this is a dilapidated hospital of obsolete type, a total of 3,627 in-patients were treated, an increase of almost 23 per cent over the preceding year. It was necessary to shorten the period of treatment to increase the turnover of patients, in order to make it possible to handle the large number of beneficiaries applying for relief and to effect the necessary economies to operate within the restricted allotment. American merchant seamen comprise 91 per cent of the total clientele. The average per diem cost for the year was $3.04. A total of $40,028.70 was collected for the treatment of pay patients, chiefly foreign seamen, and turned over to the collector of customs.

The clinical laboratory was enlarged and additional equipment added; 27,369 clinical examinations were made, including 4,239 Wassermann tests. In the X-ray department 3,598 exposures were made. There were 3,816 dental examinations and 18,252 dental treatments. Instruction in the principles of first aid consumed 295 hours; 7,412 eye, ear, nose, and throat treatments were given, and 2,324 intravenous doses of salvarsan administered. Several cases of smallpox and two patients with plague were treated. The out-patient office in the customhouse was refurnished and renovated, and the examination rooms were subdivided into cubicles. More than 10,000 physical examinations were made, and 14,083 out-patient treatments were furnished.

This hospital has been approved by the American Medical Association for the training of internes.

Marine Hospital No. 15, Pittsburgh, Pa.—Senior Surg. C. H. Gardner in charge. This hospital, with a rated capacity of 60 beds, had a daily average of 57 patients, being filled beyond its capacity at certain seasons of the year. Additional ward space is needed and could be supplied by the construction of quarters for nurses and other personnel now housed in the hospital building. Patients of the United States Veterans' Bureau comprised 72.4 per cent of the total number treated and the refund to the service from this source amounted to $54,968.40, or approximately 60 per cent of the total operating cost.

Marine Hospital No. 16, Portland, Me.—Surg. George Parcher in charge. This hospital was kept filled to capacity, and its facilities were often overtaxed by beneficiaries applying for treatment. There were 12.9 per cent more patients of all classes treated in hospital than during the preceding year, representing an increase both in American merchant seamen and in patients of the United States Veterans' Bureau. The quarters of the medical officer in charge and of the nurses have been vacated to be converted into ward space to enlarge the capacity of the hospital. Although constant economies were required, making it necessary to postpone the purchase of many items of needed equipment, a satisfactory standard of medical care has been provided. Ten attending specialists on a fee basis supplement the small hospital staff. The clinical laboratory made 2,969 examinations; there were 909 X-ray exposures and 6,187 physiotherapy treatments, including 774 by massage, 198 by electrotherapy, 4,222 by thermotherapy, and 993 by exercise.

Marine Hospital No. 17, Port Townsend, Wash.—Surg. F. H. McKeon in charge. The increase in the volume of the work done by this hospital has continued; the entire 100 beds available have been in use during nearly the entire year. All classes of beneficiaries are making additional demands on the relief function of the service in this district, and there can be no doubt that if the proposed new marine hospital for Puget Sound were located at Seattle, the logical site, an additional 100 beds would be needed at once. Although the quality of medical and surgical service rendered by the resident officers has been satisfactory, the service of attending specialists from Seattle, the nearest large city, involves much inconvenience.

Marine hospital No. 18, St. Louis, Mo.—Surg. A. J. McLaughlin in charge. The trend of developments in recent years at this port is shown in the following comparison of transactions:

Year	Patients treated in hospital	Hospital days	Number of out-patient treatments	Number of physical examinations
1923	335	18, 206	2, 051	503
1924	467	20, 506	4, 099	910
1925	549	20, 811	3, 779	1, 182
1926	519	21, 226	4, 922	1, 007
1927	518	22, 578	5, 608	1, 244

There has been a very large increase in the number of patients of the Employees' Compensation Commission, who constituted 23 per cent of all the hospital patients and required 26 per cent of all physical examinations and 68 per cent of all out-patient treatments furnished. There was a slight decrease in the number of other beneficiaries.

The quality of medical and surgical service was maintained at a satisfactory standard by freely utilizing the consultants on the staff. Of these there were 10 operating on a fee basis and representing the specialties of röntgenology, opthalmology, rhinology, orthopedics, dermatology, surgery, medicine, genito-urinary diseases, and neuropsychiatry. Operating expenses were reduced, at some sacrifice, to $4.08 per patient, although the high cost of maintaining the one-story frame buildings, some of which are 72 years old, makes it difficult to secure as low a per diem cost as would be otherwise possible. Moreover, a small hospital of only 70 beds, providing a high standard of care, including specialistic services, can not be expected to operate with a per diem as low as a larger institution.

Marine Hospital No. 19, San Francisco, Calif.—Surg. R. H. Creel in charge. Title to the present site, which has been occupied since January 24, 1874, on a revokable lease, was transferred from the War Department to the Treasury Department by the act approved March 3, 1927 (44 Stat. 1378). This makes it possible to proceed with the construction of a new and larger marine hospital to replace the scattered, one-story inflammable wards, in accordance with a part of the Government's proposed building program now awaiting an appropriation. Plans for the new buildings are in course of preparation. A larger number of patients (2,796) were given hospital care than in any previous year, but this was accomplished by speeding up the turnover and shortening the period of care, a policy which has subjected the service to some criticism. Four insane beneficiaries were transferred to the State hospital for the insane, and 7 patients no longer requiring actual hospital care were sent, without expense to the Government, to Sailors' Snug Harbor, Staten Island, New York. The work in the out-patient office increased 20 per cent over the preceding year, although it was necessary to turn away many beneficiaries requiring physical examinations, of which 2,629 were made. Arsphenamine injections numbered 2,876, a smaller number than usual, owing, it is believed, to a lessened incidence of syphilis among beneficiaries applying at this hospital for treatment. For several years all patients admitted to the hospital have been given a Wassermann test as a routine procedure. In the years 1924 and 1925 the number of positive Wassermann tests was 7 per cent of those examined. In 1926 the positive tests dropped to 5.7 per cent, and in 1927 there was a further decline to 4.6 per cent. The reason for this reduction in luetic infection is not readily apparent, but may be attributed in part to the persistent antivenereal propaganda by Government agencies, plus increased efficiency of therapeutic remedies utilized of late years.

In the physiotherapy section 5,023 patients were given a total of 41,397 treatments, including massage, passive exercise, electrotherapy, hydrotherapy, and thermotherapy. In one form or another, physiotherapy was utilized in almost every type of infection or disability—skin cases, joint affections, indolent ulcers, and paralysis—and in many instances with signal success. It is believed that greater space, added equipment, and more personnel could be utilized to an advantage in this branch of therapy. Dental treatments aggregated

9,140, an increase of 20 per cent over last year; 6,642 X-ray exposures were made, and 4,082 clinical laboratory examinations, which included 2,500 blood Wassermann tests. Seventy-nine deaths occurred, 33 necropsies were performed, and 482 tissue examinations made.

Chief Pharmacist F. L. Gibson, in addition to his other duties, is special disbursing officer on the Pacific coast; 736 pay rolls were handled, involving disbursements for salaries of $584,001.33.

The kitchen force manufactured 15,000 pounds of soap from waste fat and oils. The station garbage is disposed of under terms of a contract whereby the Government receives $100 per month.

Social welfare activities were carried on, without expense to the Government, by the Seamen's Church Institute, the Knights of Columbus, the American Legion, and miscellaneous organizations. The bulk of the welfare work has been borne by the Seamen's Church Institute, which maintains a circulating library and distributes books and magazines to the wards, furnishes articles of clothing and stationery and financial assistance to deserving indigent patients, assists in the handling of claims, and executes various commissions for disabled patients. The institute also provides devotional services in the wards and supervises Christmas entertainments, moving-picture shows, and concerts. It furnishes billiard tables, piano, radio, and games (other than cards), and in innumerable ways renders valuable service worthy of the highest commendation.

This hospital has been approved by the American Medical Association for the training of internes.

Marine Hospital No. 20, Savannah, Ga.—Surg. W. M. Bryan in charge. This is a modern, fireproof hospital, fully equipped and adequate in size and appointments for the port. It continued, as heretofore, to admit patients of the United States Veterans' Bureau, as it is the only Government-owned hospital in the city. By rearrangement of the storerooms, the capacity of the hospital was increased by 12 beds and its flexibility increased by adding three small wards.

Marine Hospital No. 21, Stapleton, N. Y.—Surg. M. J. White in charge. A total of 4,025 patients were treated in hospital, an increase of 13 per cent over the preceding year. American merchant seamen represent 76 per cent of the clientele, Coast Guard personnel 12 per cent, patients of the Employees' Compensation Commission 4 per cent, civilian seamen from Army transports and other vessels of the Engineer Corps 2 per cent. The remaining 6 per cent was made up of foreign seamen, patients from the Lighthouse Service, Veterans' Bureau, Coast and Geodetic Survey, Navy, etc. The turnover of patients is very rapid because only essentially acute cases are treated here. There was an increase of about 25 per cent over the preceding year in the number of surgical operations, 697 general anesthetics, and 813 local anesthetics being given. Ethylene gas for selected cases has been introduced. There were 1,567 arsphenamine injections, 7,387 X-ray exposures, 15,419 clinical laboratory examinations, 31,139 physiotherapy treatments, and 8,502 dental treatments. One hundred and one patients died in the institution and there were 49 autopsies. A full-time chaplain, with two assistants, assists, in addition to his other duties, in providing recreation and diversion for patients, and handled 3,766 welfare cases. There is a full-time librarian, who reported a circulation of 12,233 books. Magazines and periodicals are supplied without cost to the Government by welfare organizations and individuals. There were 14,208 visitors to the hospital.

The medical staff consists of 17 full-time medical officers, including 6 internes, 2 part-time medical officers (1 röntgenologist and 1 for eye, ear, nose, and throat work), and 2 dental officers; there are 11 attending specialists at $1 per annum, who also serve the marine hospitals at Ellis Island and Hudson Street.

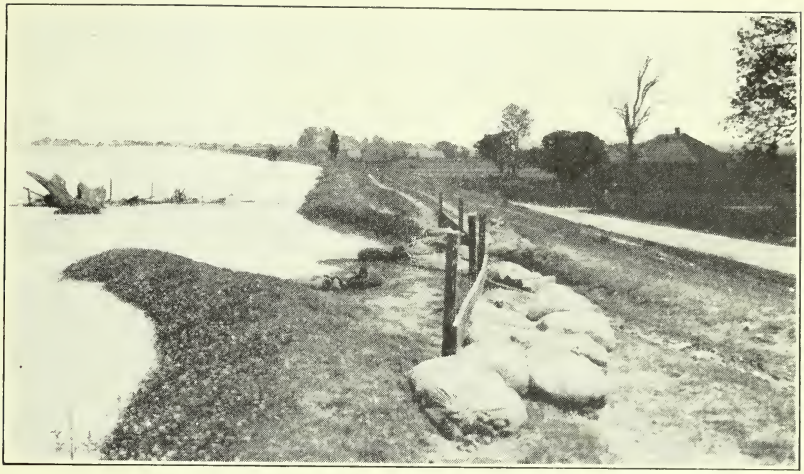
The cost of food per patient per day was 53 cents, and the total average per diem, $3.89. Some of the buildings at this hospital are nearly 100 years old and have been occupied by the Public Health Service since the marine hospital on Bedloe Island was abandoned in 1883. The outstanding need is new construction to enlarge the hospital to 500 beds to meet present demands.

This hospital has been approved by the American Medical Association for the training of internes.

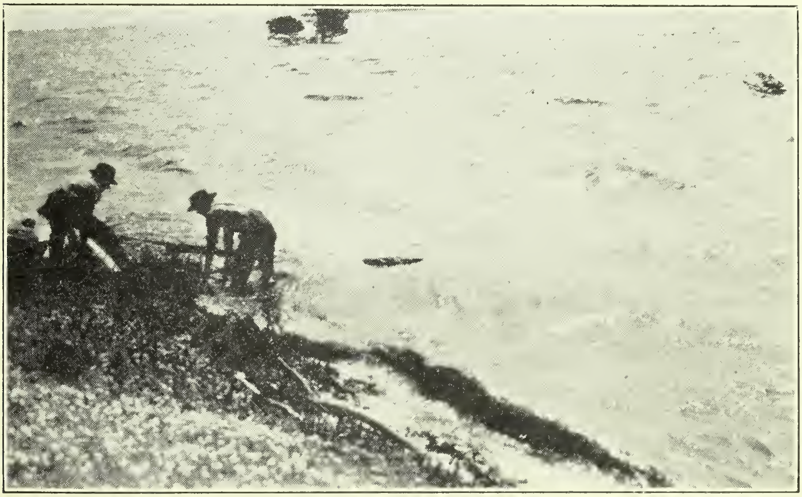
Marine Hospital No. 43, Ellis Island, N. Y.—Senior Surg. E. K. Sprague in charge. This hospital is owned by the Department of Labor and operated by the Public Health Service primarily for the care of detained immigrants, but it continues, as in recent years, to receive the overflow of American merchant seamen from the marine hospital at Stapleton, an average of approximately 200 seamen being treated here. The average duration of treatment has increased from 12 days in former years, when only immigrant patients were detained for short periods, chiefly for purposes of diagnosis, to 18 days, due to the fact that the chief purpose of the hospital is now for treatment. The dental officer devotes his time almost exclusively to treatment of merchant seamen and Coast Guard patients, only an occasional extraction or treatment for the relief of pain being necessary for immigrants.

The hospital is seriously in need of general repairs. An estimate of the needs, agreed upon by representatives of the supervising architect and the Department of Labor, was submitted to the Congress and included in the second deficiency bill, which failed to pass before the Senate adjourned on March 4, 1927. This hospital has been approved by the American Medical Association for the training of internes.

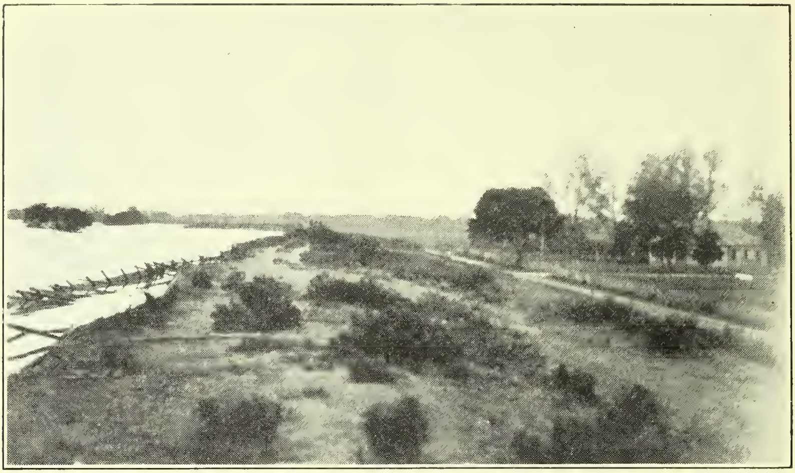
Marine Hospital No. 66, Carville, La.—Surg. (R) O. E. Denney in charge. An increasing number of leper patients showed a gratifying progress toward cure. Of the 255 patients in hospital, 154 are taking crude chaulmoogra oil by mouth, the doses ranging from 3 drops to 40 drops daily according to the tolerance of the individual. Formalized capsules have been found useful for oral administration by lessening the nausea and vomiting, which is otherwise not uncommon. The use of ethyl esters of chaulmoogra oil has also been continued. Twenty-eight patients have been placed on intramuscular injections of crude chaulmoogra oil which, together with an analgesic, is thus administered painlessly twice weekly in doses ranging from 3 to 8 c. c. Intramuscular or hypodermic injections of chaulmoogra oil or its derivatives in the ordinary manner, i. e., with no analgesic accompanying, cause a very considerable amount of pain. Fifty lepers are receiving intravenous therapy, consisting largely of neosalvarsan, tryparsemide, and mercurochrome. Another group of advanced lepers is receiving intravenous injections of basic fuchsin,



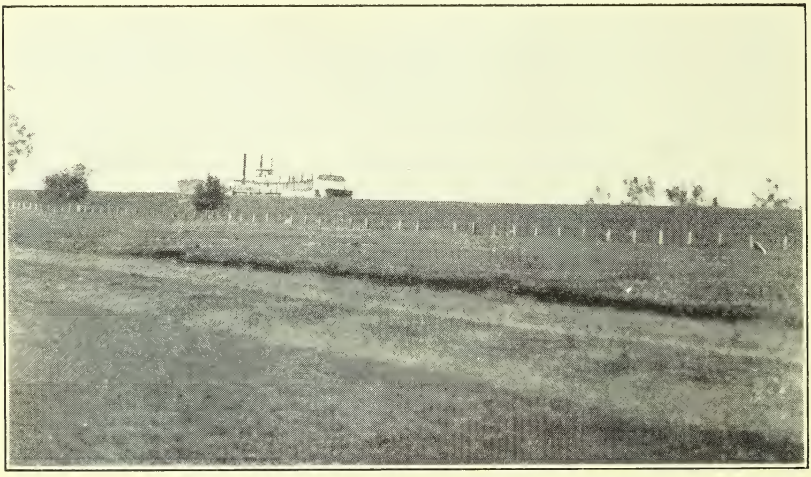
SAND-BAGGING TOP OF LEVEE AT THE PEAK OF FLOOD, CARVILLE, LA.



REPAIRING THE EFFECTS OF WAVE WASH, CARVILLE, LA.



LEVEE AT FLOOD STAGE IN MISSISSIPPI RIVER. WATER LEVEL ALMOST UP TO SECOND STORY OF LEPER COTTAGES, CARVILLE, LA.



THE LEVEE FROM THE HOSPITAL GROUNDS. "STERN-WHEELER" 25 FEET ABOVE THE ROAD, CARVILLE, LA.

in increasing doses, with somewhat encouraging results. Another group of 25 lepers receives periodic subcutaneous or intramuscular injections of smallpox virus, it having been found by accident that certain clinical phenomena, coincident with vaccination of lepers against smallpox, is of a nature that suggests curative properties in the virus.

Surgery has been routinely employed to correct or mitigate the painful deformities that are characteristic of this disease. Seventy surgical operations, relatively minor in nature, were performed, and 75,000 surgical dressings were furnished. Physiotherapy has a very important place in the treatment of leprosy, and 38,953 such treatments were given. Considerable improvement has been observed in the contraction deformities of the hands and feet, and ulcers have responded almost invariably with beneficial results from ultra-violet ray treatment. Bone necroses have been arrested in many cases and nerve pains relieved with the ultra-violet ray and diathermy.

The resident dentist has been kept constantly employed, directing his efforts largely toward the treatment or prevention of pyorrhea, the routine treatment of leprous oral ulcers and diseased root canals, and the construction of crowns and bridgework, fillings, and dentures. Attending specialists in neuro-psychiatry, ophthalmology, and orthopedics visit the hospital weekly from New Orleans to give treatments in their respective specialties.

Seventeen leper patients died during the year, making a total of 225 deaths here since the institution was first established. The average duration of treatment at the National Leper Home of those who died this year was 5 years 305 days.

Recognizing the great importance of occupation as well as treatment to prevent morbid introspection, employment was provided for an average of 81 lepers, or approximately one-third of all those physically fit for light work. The duties assigned range in variety from the more simple tasks of bedside care of fellow patients to work such as assisting in the general laboratory, physiotherapy department, dental laboratory and treatment rooms. The aggregate compensation paid to the patients for these services averaged $2,000 per month and ranged from $15 to $45 per month for each patient employed. Arrangements have been made to introduce diversional occupational therapy for patients unable or unwilling to work, and one or more aids skilled in common crafts will be employed for this purpose. A large library containing current magazines and newspapers, as well as books, is constantly available for the use of patients, for whom, also, a concrete tennis court has been constructed. A small golf course has been started on the patients' grounds and a surprisingly large number of enthusiastic players has been developed. Two evenings per week of motion pictures are provided.

On August 19, 1926, a fire destroyed one of the small buildings. A hurricane on August 25, 1926, carried away many roof coverings and did considerable damage to buildings, awnings, glass, plaster, and furniture. A flood in the Mississippi River, on the east bank of which the hospital is located, threatened to inundate the grounds and caused considerable apprehension for a period of six weeks. While the hospital has only 1 mile of levee on its own grounds it was in this emergency assigned the responsibility of maintaining nearly 3 miles of levee, the day laborers, carpenters, painters, and even members of the technical staff, cheerfully cooperating with the levee officials.

Fifty-six patients were admitted during the year from the various States, as shown below:

Illinois	1	Louisiana	24
Florida	3	New York	4
Montana	1	North Carolina	1
North Dakota	1	Oregon	1
Ohio	1	Texas	9
Pennsylvania	1	Washington	1
Tennessee	1	District of Columbia	1
California	6		

The following is a tabulation of the nativity (place of birth) of the patients under treatment June 30:

Arkansas	1	Bohemia (Czechoslovakia)	1
Alabama	1	British Guiana	3
California	9	Canada	1
Florida	17	Cape Verde Islands	1
Georgia	3	Central America	1
Kentucky	1	China	18
Louisiana	90	Dutch Guiana	1
Maryland	1	Finland	2
Minnesota	1	Germany	2
Mississippi	4	Greece	12
New Jersey	1	Hungary	1
New York	3	India	2
North Carolina	2	Ireland	1
Oklahoma	1	Italy	7
Pennsylvania	1	Mexico	12
Rhode Island	1	Palestine	3
South Carolina	1	Panama	1
Tennessee	1	Portugal	1
Texas	17	Russia	2
Virginia	1	Spain	5
Hawaii Territory	7	Sweden	1
Philippine Islands	5	West Indies	4
Porto Rico	2	Virgin Islands	1
Bahama Islands	1	Bermuda Islands	2

A dairy herd of 75 cows, repeatedly registered as nontuberculous, furnished 47,276 gallons of milk. A sanitary dairy building has been completed.

The chief needs of the institution are for new construction to provide—

(1) Detention facilities for the control of the insane and to prevent the escape of patients attempting to leave the institution before treatment has been completed.

(2) A hospital building to care for the bedridden and dying.

(3) A recreation building and workshop for patients.

Marine Hospital No. 82, Norfolk, Va.—Surg. A. D. Foster in charge. The average daily number of hospital patients was 174, as compared with 169 for the preceding year; the largest number in the history of the institution, 218, was on February 24, 1927. The total number admitted was 2,144, as compared with 2,033 for the preceding year. The increase in out-patient activities is evidenced by 7,974 such treatments in 1925, 10,380 in 1926, and 11,383 in 1927. The United States Veterans' Bureau furnished 7.9 per cent of all patients, the Employees' Compensation Commission 8.5 per cent, the Coast

Guard 12.1 per cent. Other beneficiaries were chiefly American merchant seamen. There were 5 insane patients admitted to the hospital, of whom 1 was transferred to a Virginia institution, 1 to the State of North Carolina, and the other 3 to St. Elizabeths Hospital.

In the clinical laboratory 9,797 clinical examinations were made, of which 2,136 were blood Wassermann tests; 2,601 patients were examined in the X-ray laboratory; 1,804 intravenous doses of arsphenamine were administered; and 3,677 bills of health were issued to out-going vessels, the latter being a cooperative measure related to other general activities of the Public Health Service.

This hospital has been approved by the American Medical Association for the training of internes.

Relief Station No. 278, Milwaukee, Wis.—Acting Asst. Surg. Robert J. Bach in charge. This station is manned by only one medical officer, who made the necessary calls, aggregating 393, at the contract hospitals to furnish medical and surgical treatment for service patients therein, devoting the remainder of the day to the out-patient office. One hundred and nine patients requiring prolonged hospital care were transferred to the marine hospital at Chicago; patients in contract hospital averaged only 11 days' treatment each. Instruction and examination in ship sanitation and first aid occupied 99 hours. Physical examinations were made of 818 beneficiaries, including pilots, American merchant seamen, Coast Guard and Lighthouse personnel, postal employees, applicants for citizens' military training camps, United States Army Reserve Corps, United States Employees' Compensation Commission beneficiaries, civil service applicants, food handlers, immigrants, and claimants of the Bureau of Pensions.

Relief Station No. 245, Galveston, Tex.—Surg. W. H. Slaughter in charge. This station occupies five rooms in the customhouse. A total of 4,832 patients were given 13,325 treatments, including 1,472 injections of neosalvarsan; 1,209 physical examinations were made. Fifty-seven applicants for first aid were instructed and examined, consuming 205½ hours; 2,986 port sanitary statements were issued, 24 radiograms were exchanged with 8 ships at sea in furnishing medical advice by radio, and 113 liquor permits were issued. Hospital care, dental care, X-ray facilities, etc., were provided by contract. Thirty-six patients requiring prolonged hospital care were transferred to the marine hospital at New Orleans, 5 tuberculous patients to the marine hospital at Fort Stanton, and 1, a leper, to Carville. The need for a marine hospital at this port becomes more imperative each year.

Relief Station No. 270, Manila, P. I.—Surg. C. R. Eskey in charge. This relief station, the most remote of any in the Public Health Service, is primarily for the relief of sick and disabled American merchant seamen. It operates at three points of entry—Manila, Cebu, and Iloilo—the out-patient offices being located in the quarantine offices at each port, and the relief is provided by medical officers assigned to quarantine duties in addition to their other functions. It was, as heretofore, necessary to limit hospital care to the port of Manila alone. Out-patient treatment and physical examinations were given 1,314 persons at Manila, 258 at Cebu, and 210 at Iloilo. The demands for relief are increasing in all these ports from year to year.

TABLE 1.—*Number of patients treated annually, 1868 to 1927* [1]

Fiscal year	Sick and disabled patients furnished relief	Fiscal year	Sick and disabled patients furnished relief
Prior to reorganization:		After reorganization—Continued.	
1868	11,535	1898	52,709
1869	11,356	1899	55,489
1870	10,560	1900	56,355
After reorganization:		1901	58,381
1871	14,256	1902	56,310
1872	13,156	1903	58,573
1873	13,529	1904	58,556
1874	14,356	1905	57,013
1875	15,009	1906	54,363
1876	16,808	1907	55,129
1877	15,175	1908	54,301
1878	18,223	1909	53,704
1879	20,922	1910	51,443
1880	24,860	1911	52,209
1881	32,613	1912	51,078
1882	36,184	1913	50,604
1883	40,195	1914	53,226
1884	44,761	1915	55,782
1885	41,714	1916	58,357
1886	43,822	1917	64,022
1887	45,314	1918	71,614
1888	48,203	1919	79,863
1889	49,518	1920	110,907
1890	50,671	1921	144,344
1891	52,992	1922	153,633
1892	53,610	1923 [2]	126,956
1893	53,317	1924	159,686
1894	52,803	1925	204,944
1895	52,643	1926	245,140
1896	53,804	1927	249,973
1897	54,477		

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[1] These figures do not include patients treated in connection with veterans' relief activities of the service as follows: 1918, 192; 1919, 13,856; 1920, 279,036; 1921, 667,832; 1922, 242,379; 1923, 9,704; 1924, 3,414; 1925, 4,360; 1926, 3,749; and 1927, 2,830.

[2] In this year the practice of recounting out-patients applying for treatment in more than one calendar month was discontinued.

TABLE 2.—*Transactions at United States marine hospitals and other relief stations, fiscal year 1927*

	Total number of patients treated	Number of patients treated in hospitals	Died	Patients remaining in hospital June 30, 1927	Number of days' relief in hospital	Number of patients furnished office relief	Number of times office relief was furnished	Number of physical examinations
Grand total	252,803	41,851	921	3,256	1,288,061	210,952	632,341	103,943
FIRST-CLASS STATIONS								
MARINE HOSPITALS								
1. Baltimore, Md	7,400	1,633	48	161	57,315	5,767	23,521	3,314
2. Boston, Mass	5,579	1,759	44	126	51,328	3,820	9,011	3,634
3. Buffalo, N. Y	4,023	793	18	79	26,192	3,230	13,322	2,204
5. Chicago, Ill	32,997	1,095	35	103	45,871	31,902	74,623	2,377
6. Cleveland, Ohio	4,316	1,169	19	77	27.094	3,147	8,075	2,060
7. Detroit, Mich	1,986	710	20	55	24,426	1,276	4,827	2,035
8. Evansville, Ind	245	178	3	40	15,033	67	169	94
9. Fort Stanton, N. Mex	772	374	33	209	81,683	398	1,811	110
10. Key West, Fla	835	282	7	25	8,786	553	1,256	127
11. Louisville, Ky	862	580	12	40	13,724	282	1,074	225
12. Memphis, Tenn	1,018	589	9	46	17,213	429	1,170	529
13. Mobile, Ala	2,809	847	21	70	27,554	1,962	7,431	3,403
14. New Orleans, La	8.537	3,627	69	273	116,952	4.910	14.085	10,379
15. Pittsburgh, Pa	1,633	739	29	66	20,716	894	2,559	830
16. Portland, Me	1,243	663	9	58	19.181	580	1,199	302
17. Port Townsend, Wash	1,270	959	33	95	31.811	311	1,027	68
18. St. Louis, Mo	1,149	518	21	57	22,576	631	5,608	1.244
19. San Francisco, Calif	12.631	2,796	77	297	100,977	9,835	35.713	2,629
20. Savannah, Ga	2,884	1,034	17	89	33,746	1,850	4,954	395
21. Stapleton, N. Y	5,928	4,026	101	233	98,749	1,902	5,813	326
22. Vineyard Haven, Mass	475	212	5	23	8,657	263	499	69

TABLE 2.—*Transactions at United States marine hospitals and other relief stations, fiscal year 1927*—Continued

	Total number of patients treated	Number of patients treated in hospitals	Died	Patients remaining in hospital June 30, 1927	Number of days' relief in hospital	Number of patients furnished office relief	Number of times office relief was furnished	Number of physical examinations
FIRST-CLASS STATIONS—Continued								
MARINE HOSPITALS—continued								
43. Ellis Island, N. Y	7,216	6,760	75	270	121,793	456	663	389
66. Carville, La	646	315	17	255	95,565	331	610	2
70. New York, N. Y	23,534	-------	------	--------	----------	23,534	104,084	12,669
82. Norfolk, Va	7,846	2,296	58	156	63.669	5,550	11,391	2,766
Contract overflow hospitals	122	122	8	31	14,713	--------	--------	--------
Total	137,956	34,076	788	2,934	1,145,324	103,880	334,495	52,180
SECOND, THIRD, AND FOURTH CLASS STATIONS, ETC.								
255. Aberdeen, Wash	401	51	2	1	736	350	441	44
200. Albany, N. Y	75	18	------	--------	203	57	312	149
201. Apalachicola, Fla	51	10	------	--------	145	41	82	--------
202. Ashland, Wis	102	27	------	--------	511	75	104	24
203. Ashtabula, Ohio	334	44	1	3	438	290	674	50
204. Astoria, Oreg	326	71	1	1	611	255	642	57
301. Balboa Heights, Canal Zone	941	336	7	14	5,633	605	768	1
207. Bangor, Me	57	13	1	1	300	44	63	54
208. Bay City, Mich	58	6	1	--------	51	52	153	2
209. Beaufort, N. C	201	23	------	--------	184	178	891	39
210. Bellingham, Wash	198	10	------	--------	61	188	350	187
212. Biloxi, Miss	189	6	------	--------	35	183	354	82
213. Boothby Harbor, Me	38	11	------	--------	312	27	62	20
215. Bridgeport, Conn	10	7	------	--------	66	3	4	10
217. Brunswick, Ga	70	11	------	--------	43	59	80	24
219. Burlington, Iowa	42	24	------	--------	276	18	34	--------
220. Cairo, Ill	450	80	------	3	971	370	1,094	22
221. Cambridge, Md	34	18	1	--------	221	16	26	2
223. Cape May, N. J	1,022	72	------	--------	437	950	2,440	187
224. Charleston, S. C	746	71	------	--------	422	675	1,285	302
225. Chincoteague, Va	244	-------	------	--------	----------	244	523	35
226. Cincinnati, Ohio	316	43	1	--------	655	273	557	515
229. Cordova, Alaska	155	47	4	4	930	108	111	5
230. Crisfield, Md	807	18	1	--------	137	789	3,005	16
234. Duluth, Minn	689	81	------	2	1,048	608	791	303
236. Eastport, Me	11	-------	------	--------	----------	11	35	7
237. Edenton, N. C	27	-------	------	--------	----------	27	27	--------
238. Elizabeth City, N. C	119	2	------	--------	25	117	304	36
352. El Paso, Tex	186	22	1	3	437	164	811	151
239. Erie, Pa	430	69	1	1	923	361	949	121
240. Escanaba, Mich	56	12	------	--------	155	44	93	10
241. Eureka, Calif	215	51	2	--------	733	164	315	22
235. Everett, Wash	197	27	1	2	162	170	231	63
243. Fall River, Mass	95	6	------	--------	117	89	264	14
244. Gallipolis, Ohio	122	53	------	1	773	69	129	13
245. Galveston, Tex	5,567	735	8	27	9,680	4,832	13,325	1,209
246. Georgetown, S. C	82	-------	------	--------	----------	82	141	4
247. Gloucester, Mass	484	21	------	--------	153	463	1,484	164
248. Grand Haven, Mich	122	18	1	--------	165	104	175	69
249. Green Bay, Wis	88	11	1	1	156	77	138	25
250. Gulfport, Miss	62	11	------	--------	71	51	82	1
251. Hancock, Mich	94	2	------	--------	27	92	115	9
252. Hartford, Conn	14	13	------	1	254	1	2	--------
254. Honolulu, Hawaii	1,013	239	5	5	3,824	774	1,396	454
359. Houston, Tex	897	182	1	2	2,870	715	2,719	155
258. Jacksonville, Fla	783	59	3	--------	871	724	1,861	343
260. Juneau, Alaska	167	44	3	--------	598	123	244	38
262. Ketchikan, Alaska	688	158	3	5	2,317	530	822	66
263. Kodiak, Alaska	25	-------	------	--------	----------	25	105	1
264. La Crosse, Wis	41	6	------	--------	20	35	95	40
242. Lee Hall, Va	1,419	-------	------	--------	----------	1,419	1,759	1,163
265. Lewes, Del	203	25	2	--------	309	178	611	48
266. Los Angeles, Calif	1,465	190	5	18	4,281	1,275	4,104	1,253
268. Ludington, Mich	127	10	2	--------	89	117	462	102
269. Machias, Me	32	-------	------	--------	----------	32	66	16
270. Manila, P. I	1,276	181	3	7	4,625	1,095	1,826	694
271. Manistee, Mich	78	13	1	--------	269	65	218	13
272. Manitowoc, Wis	216	54	1	--------	530	162	241	14
273. Marquette, Mich	234	9	------	1	87	225	527	55
274. Marshfield, Oreg	87	14	------	1	62	73	119	21
277. Menominee, Mich	88	2	------	--------	11	86	224	16
347. Miami, Fla	204	33	1	--------	346	171	360	590
278. Milwaukee, Wis	1,153	212	2	12	2,326	941	2,040	818

TABLE 2.—*Transactions at United States marine hospitals and other relief stations, fiscal year 1927*—Continued

	Total number of patients treated	Number of patients treated in hospitals	Died	Patients remaining in hospital June 30, 1927	Number of days' relief in hospital	Number of patients furnished office relief	Number of times office relief was furnished	Number of physical examinations
SECOND, THIRD, AND FOURTH CLASS STATIONS, ETC.—Continued								
282. Nantucket, Mass	322	45	------	--------	283	277	439	27
283. Nashville, Tenn	30	1	------	--------	14	29	74	75
284. Natchez, Miss	163	14	------	--------	133	149	357	14
285. New Bedford, Mass	318	19	1	--------	161	299	532	254
286. New Bern, N. C	222	71	------	1	857	151	245	33
288. New Haven, Conn	87	9	1	--------	296	78	189	79
289. New London, Conn	410	26	1	--------	345	384	633	78
291. Newport, Ark	25	--------	------	--------	----------	25	66	--------
292. Newport, Oreg	58	3	------	--------	30	55	141	6
293. Newport, R. I	234	49	2	2	622	185	312	35
294. Newport News, Va	183	--------	------	--------	----------	183	244	93
295. Nome, Alaska	40	7	------	--------	62	33	120	2
297. Ogdensburg, N. Y	122	9	------	--------	305	113	210	36
298. Oswego, N. Y	130	14	1	--------	122	116	340	46
300. Paducah, Ky	188	17	------	3	197	171	795	25
306. Panama City, Fla	59	9	------	--------	97	50	96	--------
302. Pensacola, Fla	419	70	2	1	517	349	1, 174	58
303. Perth Amboy, N. J	52	10	1	1	110	42	102	45
304. Petersburg, Alaska	96	--------	------	--------	----------	96	345	--------
305. Philadelphia, Pa	4, 512	740	8	15	7, 051	3, 772	14, 589	6, 025
307. Ponce, P. R	94	30	------	--------	455	64	90	21
308. Port Angeles, Wash	201	9	------	--------	48	192	274	89
309. Port Arthur, Tex	1, 404	175	2	4	1, 779	1, 229	3, 426	169
310. Port Huron, Mich	275	16	------	--------	216	259	626	228
312. Portland, Oreg	1, 321	198	2	6	3, 976	1, 123	3, 061	1, 418
356. Portsmouth, N. H	3	2	------	--------	9	1	1	1
314. Providence, R. I	480	64	1	--------	611	416	934	253
315. Provincetown, Mass	137	--------	------	--------	----------	137	369	55
316. Richmond, Va	142	16	------	--------	234	126	266	88
317. Rock Island, Ill	1, 948	17	2	1	139	1, 931	7, 303	2, 449
318. Rockland, Me	202	1	------	--------	5	201	304	44
320. Saginaw, Mich	19	2	------	--------	2	17	56	1
319. St. Thomas, Virgin Islands	27	3	------	--------	173	24	26	7
323. San Diego, Calif	661	64	7	8	5, 386	597	1, 420	604
324. Sandusky, Ohio	50	8	------	--------	41	42	69	32
326. San Juan, P. R	791	111	1	1	1, 928	680	1. 790	144
355. San Pedro, Calif	4, 380	333	11	5	3, 390	4, 047	10, 243	675
327. Sault Ste. Marie, Mich	714	179	1	7	1, 691	535	1, 356	101
329. Seattle, Wash	3, 773	156	9	6	2, 796	3, 617	6, 503	9, 343
331. Sheboygan, Wis	64	2	------	--------	15	62	131	23
328. Sitka, Alaska	65	8	------	1	160	57	212	3
332. Solomons, Md	183	5	------	--------	53	178	262	1
334. South Bend, Wash	95	17	------	--------	129	78	131	16
361. Southport, N. C	258	14	------	--------	78	244	505	33
335. Superior, Wis	341	80	------	--------	894	261	499	72
345. Tacoma, Wash	306	25	3	2	371	281	784	192
336. Tampa, Fla	622	86	------	2	977	536	817	178
337. Toledo, Ohio	626	105	------	4	1, 574	521	988	309
338. Vicksburg, Miss	375	98	2	--------	1, 228	277	878	11
339. Washington, D. C	2, 551	174	3	9	2, 810	2, 377	19, 550	6, 924
360. Washington, D. C. (dental clinic)	1, 021	--------	------	--------	----------	1, 021	9, 092	--------
340 Washington, N. C	148	25	------	--------	174	123	219	3
341. White Stone, Va	550	--------	------	--------	----------	550	2, 224	11
362. Wilmington, Del	166	1	------	--------	9	165	478	48
342. Wilmington, N. C	426	24	------	--------	256	402	1, 174	157
343. Wrangell, Alaska	6	1	------	--------	5	5	21	--------
MISCELLANEOUS								
Black Mountain, N. C. (Cragmont Sanatorium)	3	3	1	2	953	--------	--------	--------
Curtis Bay, Md	1, 458	--------	------	--------	----------	1, 458	4, 685	325
New London, Conn. (destroyer force and academy)	27, 894	791	------	11	5, 701	27, 103	68, 465	4, 319
Washington, D. C. (St. Elizabeths Hospital)	127	127	4	112	39, 940	--------	--------	--------
Contract physicians for U. S. Coast Guard and Lighthouse Service	4, 151	18	------	2	190	4, 133	13. 416	1, 744
U. S. Coast Guard vessels	23, 322	40	------	--------	252	23, 282	60, 848	4, 785
Emergency	74	52	------	--------	1, 195	22	82	--------
Examinations abroad	--------	--------	------	--------	----------	--------	--------	8
Total	114, 847	7, 775	133	322	142, 737	107, 072	297, 846	51, 763
Grand total	252. 803	41, 851	921	3, 256	1, 288, 061	210, 952	632, 341	103, 943

TABLE 3.—*Relief furnished at United States marine hospitals and other relief stations, fiscal year 1927, classified by beneficiary*

Beneficiary	Class of station	Total number of patients treated	Number of patients treated in hospital	Died	Patients remaining in hospital June 30, 1927	Number of days relief in hospital	Number of patients furnished office relief	Number of times office relief was furnished	Number of physical examinations
American seamen	First-class stations	75, 120	19, 173	575	1, 910	756, 142	55, 947	199, 430	21, 110
	Other relief stations	43, 859	5, 147	110	255	111, 558	38, 712	95, 554	7, 757
	Total	118, 979	24, 320	685	2, 165	867, 700	94, 659	294, 984	28, 867
Foreign seamen	First-class stations	670	485	22	44	12, 685	185	435	393
	Other relief stations	206	103	3	2	2, 598	103	145	3
	Total	876	588	25	46	15, 283	288	580	396
U. S. Coast Guard	First-class stations	8, 156	3, 266	19	166	65, 717	4, 890	12, 673	8, 051
	Other relief stations	28, 812	1, 291	1	16	10, 452	27, 521	69, 355	4, 217
	Coast Guard vessels	23, 322	40			252	23, 282	60, 848	4, 785
	Contract physicians	4, 019	15		2	143	4, 004	13, 101	1, 734
	Total	64, 309	4, 612	20	184	76, 564	59, 697	155, 977	18, 787
Bureau of Fisheries	First-class stations	6	6			45			
	Other relief stations	44	1			11	43	95	2
	Total	50	7			56	43	95	2
U. S. Army	First-class stations	166	38			425	128	297	79
	Other relief stations	82	19	1		203	63	155	55
	Total	248	57	1		628	191	452	134
U. S. Navy and Marine Corps	First-class stations	273	78		2	1, 162	195	424	29
	Other relief stations	88	20	1		315	68	194	78
	Total	361	98	1	2	1, 477	263	618	107
Mississippi River Commission	First-class stations	167	39		8	1, 924	128	648	6
	Other relief stations	74	19			262	55	103	1
	Total	241	58		8	2, 186	183	751	7

TABLE 3.—*Relief furnished at United States marine hospitals and other relief stations, fiscal year 1927, classified by beneficiary*—Continued

Beneficiary	Class of station	Total number of patients treated	Number of patients treated in hospital	Died	Patients remaining in hospital June 30, 1927	Number of days' relief in hospital	Number of patients furnished office relief	Number of times office relief was furnished	Number of physical examinations
Seamen, U. S. Engineer Corps, and Army Transport Service.	First-class stations	1,534	784	20	82	26,963	750	1,984	21
	Other relief stations	1,016	201	4	2	2,223	815	2,337	100
	Total	2,550	985	24	84	29,186	1,565	4,321	121
U. S. Lighthouse Service	First-class stations	928	287	6	21	8,306	641	1,704	147
	Other relief stations	763	99	2	1	1,750	664	1,521	128
	Contract physicians	132	3	------	------	47	129	315	10
	Total	1,823	389	8	22	10,103	1,434	3,540	285
U. S. Coast and Geodetic Survey	First-class stations	127	55	------	2	1,589	72	342	26
	Other relief stations	495	66	2	2	638	429	1,328	395
	Total	622	121	2	4	2,227	501	1,670	421
U. S. Employees' Compensation Commission	First-class stations	37,858	1,497	17	93	40,287	36,361	98,846	5,230
	Other relief stations	8,663	622	8	40	9,397	8,041	42,371	4,960
	Total	46,521	2,119	25	133	49,684	44,402	141,217	10,190
U. S. Veterans' Bureau	First-class stations	2,822	2,618	75	225	69,008	204	2,103	27
	Other relief stations	8	1	------	------	12	7	7	102
	Total	2,830	2,619	75	225	69,020	211	2,110	129
U. S. Immigration Service	First-class stations	5,165	4,598	23	107	57,222	567	1,366	110
	Other relief stations	264	74	1	2	1,660	190	661	159
	Total	5,429	4,672	24	109	58,882	757	2,027	269
U. S. Public Health Service officers and employees	First-class stations	3,846	477	10	19	7,676	3,369	13,398	1,064
	Other relief stations	1,048	2	------	------	21	1,046	7,111	111
	Total	4,894	479	10	19	7,697	4,415	20,509	1,175
Lepers	First-class stations	315	315	17	255	95,565	------	------	------
	Other relief stations	------	------	------	------	------	------	------	------
	Total	315	315	17	255	95,565	------	------	------

Pilots	First-class stations								3,860
	Other relief stations								2,501
	Total								6,361
U. S. Civil Service applicants and post-office employees	First-class stations								9,375
	Other relief stations								12,715
	Total								22,090
Food handlers	First-class stations								1,577
	Other relief stations								422
	Total								1,999
Bureau of Pensions	First-class stations								236
	Other relief stations								473
	Total								709
Citizens' military training camps	First-class stations	329					329	696	361
	Other relief stations	268					268	662	534
	Total	597					597	1,358	895
Alaska cannery workers	First-class stations								
	Other relief stations	1,103					1,103	1,103	7,870
	Total	1,103					1,103	1,103	7,870
Emergency (Coast and Geodetic Survey, Coast Guard, and Lighthouse Services).	First-class stations								
	Other relief stations	74	52			1,195	22	82	
	Total	74	52			1,195	22	82	
Miscellaneous	First-class stations	474	360	4		608	114	149	478
	Other relief stations	507					507	798	2,651
	Total	981	360	4		608	621	947	3,129
Totals	First-class stations	137,956	34,076	788	2,934	1,145,324	103,880	334,495	52,180
	Other relief stations	87,374	7,717	133	320	142,295	79,657	223,582	45,234
	Coast Guard vessels	23,322	40			252	23,282	60,848	4,785
	Contract physicians	4,151	18		2	190	4,133	13,416	1,744
	Grand total	252,803	41,851	921	3,256	1,288,061	210,952	632,341	103,943

TABLE 4.—*Causes of admission for discharged patients and condition on discharge, United States marine hospitals and other relief stations, fiscal year 1927*

Disease or condition	Number having specified disease or injury [1]					Condition on discharge of patients for specified disease or injury				
	Major conditions for which admitted [2]	Condition second in importance	Condition third in importance [3]	Sequelæ to major condition	Total number of persons having each specified disease or injury	Cured	Improved	Not improved	Died	Other conditions
Abnormalities and congenital malformations	35	------	------	------	------	10	13	----	----	12
Blood and blood-forming organs, diseases and injuries of	43	------	------	------	------	8	17	----	7	11
Bones and cartilages, diseases and injury of	1,969	------	------	------	------	503	739	8	35	684
Circulatory system, diseases and injuries of:										
Heart disease, valvular	239	166	50	------	455	2	120	1	56	60
Varicose veins	162	75	32	------	269	73	65	1	----	23
All others	769	------	------	------	------	113	370	5	101	180
Communicable and infectious diseases, not including tuberculosis and venereal:										
Conjunctivitis, granular trachomatous	18	1	------	------	19	-------	5	----	----	13
Influenza	688	54	11	------	753	364	205	----	6	113
Malaria	219	31	2	------	252	54	108	----	2	55
Rheumatic fever, acute	136	13	3	4	156	44	59	----	1	32
Typhoid fever	82	12	------	------	94	56	14	----	4	8
All others	460	------	------	------	------	300	104	2	13	41
Dental	325	------	------	------	------	74	142	1	1	107
Digestive system, diseases and injuries of:										
Appendicitis	738	130	34	------	902	372	225	----	24	117
Gastritis	403	41	4	8	456	156	196	----	3	48
Hemorrhoids	404	142	38	------	584	240	104	----	1	59
All others	1,412	------	------	------	------	434	657	2	37	282
Ear, nose, and throat diseases and injuries of:										
Deviation, nasal septum	239	130	55	------	424	126	71	1	----	41
Otitis media	167	98	37	6	308	31	88	1	2	45
Tonsillitis	1,976	466	93	2	2,537	1,155	555	----	3	263
All others	744	------	------	------	------	286	306	3	7	142
Endocrines, diseases and injuries of	155	------	------	------	------	9	76	1	13	56
Eye and adnexa, diseases and injuries of	471	------	------	------	------	111	213	7	1	139
Genito-urinary system, diseases and injuries of (exclusive of venereal):										
Nephritis	194	147	47	2	343	10	91	----	38	55
All others	1,216	------	------	------	------	298	610	3	26	279
Hernia	1,210	373	37	------	1,620	703	255	2	11	239
Joints and bursæ, diseases and injuries of:										
Arthritis	641	122	33	248	1,044	99	386	6	7	143
All others	384	------	------	------	------	90	179	3	1	111
Leprosy	60	------	------	------	60	-------	3	----	17	40
Lymphatic system, diseases and injuries of:										
Lymphadenitis	357	59	20	195	631	106	151	----	----	100
All others	46	------	------	------	------	15	18	----	3	10
Muscles, fasciæ, tendons, and tendon sheaths, diseases and injuries of	1,156	------	------	------	------	390	533	2	2	229
Nervous system, diseases and injuries of:										
Epilepsy without psychosis	51	14	5	------	70	-------	26	1	1	23
Neuritis	209	53	10	5	277	37	118	----	2	52
All others	402	------	------	------	------	79	181	8	23	111
Obstetric and gynecological conditions	12	------	------	------	------	5	4	----	----	3
Parasitic diseases:										
Uncinariasis	27	45	14	------	86	4	14	----	2	7
All others	128	------	------	------	------	35	57	----	1	35

[1] Except in the case of specific diseases, statistics are given only for the major condition for which admitted.
[2] Represents number of discharges for each condition.
[3] Where sequelæ were given, no third diagnosis was recorded.

TABLE 4.—*Causes of admission for discharged patients and condition on discharge, United States marine hospitals and other relief stations, etc.*—Con.

Disease or condition	Number having specified disease or injury					Condition on discharge of patients for specified disease or injury				
	Major conditions for which admitted	Condition second in importance	Condition third in importance	Sequelæ to major condition	Total number of persons having each specified disease or injury	Cured	Improved	Not improved	Died	Other conditions
Poisonings and intoxications:										
Alcohol (ethyl) poisoning, acute	210	22	6	------	238	86	92	----	1	31
Alcoholism, chronic (without psychosis)	73	14	2	------	89	11	50	----	----	12
All others	110	------	------	------	------	39	47	----	3	21
Psychiatric diseases:										
Drug addiction without psychosis	8	6	3	------	17	------	1	2	----	5
All others	266	------	------	------	------	25	103	9	9	120
Respiratory system, diseases and injuries of (exclusive of tuberculosis):										
Asthma	149	25	12	1	187	16	97	1	7	28
Bronchitis	734	116	42	------	892	289	317	----	9	119
Pleurisy	213	97	13	13	336	63	94	----	9	47
Pneumonia	254	70	33	16	373	119	48	----	57	30
All others	31	------	------	------	------	6	17	----	4	4
Skin and its appendages, diseases and injuries of	879	------	------	------	------	320	357	4	5	193
Tuberculosis:										
Tuberculosis, pulmonary	932	116	35	------	1,083	2	177	2	189	562
Tuberculosis (otherwise unclassified)	99	36	5	2	142	14	28	----	14	43
Tumors:										
Carcinoma	175	29	13	4	221	9	32	2	77	55
All others	222	------	------	------	------	88	69	----	6	59
Venereal diseases:										
Chancroidal infections	1,056	157	17	499	1,729	234	541	----	1	280
Gonococcus infections	3,251	316	51	39	3,657	396	1,795	----	6	1,054
Syphilis	1,800	869	179	------	2,848	32	989	1	26	752
All others	44	------	------	------	------	12	17	----	----	15
Inoculations	26	------	------	------	------	------	3	----	----	23
Under observations	1,019	------	------	------	------	------	------	----	----	1,019
Miscellaneous:										
Cellulitis	280	57	7	46	390	130	95	----	1	54
All others	3,753	------	------	------	------	1,248	1,438	6	26	1,035
Total	33,531	------	------	------	------	9,531	13,485	85	901	9,529

NOTE.—This table does not include immigration patients discharged from U. S. Marine Hospital No. 43, Ellis Island, N. Y.

TABLE 5.—*Causes of death in United States marine hospitals and other relief stations during fiscal year 1927*

International list No.	Cause of death	Number of deaths
	PART I	
	I. Epidemic, endemic, and infectious diseases	
1	Typhoid and paratyphoid fever	5
5	Malaria	1
8	Scarlet fever	1
10	Diphtheria	2
11	Influenza	1
17	Plague	1
20	Leprosy	5
21	Erysipelas	1
24	Meningococcus meningitis	1
28	Rabies	2

TABLE 5.—*Causes of death in United States marine hospitals and other relief stations during fiscal year 1297*—Continued

International list No.	Cause of death	Number of deaths
	PART I—Continued	
	I. Epidemic, endemic, and infectious diseases—Continued	
29	Tetanus	1
31	Tuberculosis of the respiratory system	189
32	Tuberculosis of the meninges and central nervous system	3
33	Tuberculosis of the intestines and peritoneum	5
34	Tuberculosis of the vertebral column	2
35	Tuberculosis of the joints	1
36	Tuberculosis of other organs	2
37	Disseminated tuberculosis	1
38	Syphilis	16
40	Gonococcus infection	2
41	Purulent infection septicemia	6
	II. General diseases not included in Class I	
43	Cancer and other malignant tumors of the buccal cavity	4
44	Cancer and other malignant tumors of the stomach and liver	41
45	Cancer and other malignant tumors of the peritoneum, intestines, and rectum	13
46	Cancer of the female genital organs	2
48	Cancer of the skin	2
49	Cancer and other malignant tumors of other or unspecified organs	30
50	Benign tumors and tumors not returned as malignant	3
52	Chronic rheumatism, osteoarthritis, gout	1
55	Beriberi	1
57	Diabetes mellitus	11
58	Anemia or chlorosis	8
60	Diseases of the thyroid gland	1
65	Leukemia and Hodgkins disease	2
66	Alcoholism, acute and chronic	1
	III. Diseases of the nervous system and of the organs of special sense	
70	Encephalitis	3
71	Meningitis	8
72	Tabes dorsalis (locomotor ataxia)	3
74	Cerebral hemorrhage, apoplexy	25
75	Paralysis without special cause	2
76	General paralysis of the insane	3
77	Other forms of mental alienation	4
78	Epilepsy	1
86	Diseases of the ear and of the mastoid process	2
	IV. Diseases of the circulatory system	
88	Endocarditis and myocarditis	30
89	Angina pectoris	1
90	Other diseases of the heart	114
91	Diseases of the arteries	27
92	Embolism and thrombosis (not cerebral)	4
93	Diseases of the veins (varices, hemorrhoids, phlebitis, etc.)	1
95	Hemorrhage without specified cause	1
	V. Diseases of the respiratory system	
99	Bronchitis	2
100	Broncho-pneumonia	30
101	Pneumonia	70
102	Pleurisy	4
103	Congestion and hemorrhagic infarct of the lung	1
105	Asthma	5
107	Other diseases of the respiratory system	2
	VI. Diseases of the digestive system	
111	Ulcer of the stomach and duodenum	9
112	Other diseases of the stomach	2
116	Diseases due to other intestinal parasites	1
117	Appendicitis and typhlitis	23
118	Hernia	14
119	Other diseases of the intestines	2
122	Cirrhosis of the liver	4
124	Other diseases of the liver	4
126	Peritonitis without specified cause	3
127	Other diseases of the digestive system (cancer and tuberculosis excepted)	6

TABLE 5.—*Causes of death in United States marine hospitals and other relief stations during fiscal year 1297*—Continued

International list No.	Cause of death	Number of deaths
	PART I—Continued	
	VII. Nonvenereal diseases of the genito-urinary system and adnexa	
128	Acute nephritis	13
129	Chronic nephritis	33
131	Other diseases of the kidneys and adnexa	2
133	Diseases of the bladder	4
134	Diseases of the urethra, urinary abscess, etc	1
135	Diseases of the prostate	6
136	Nonvenereal diseases of the male genital organs	1
	IX. Diseases of the skin and of the cellular tissue	
151	Gangrene	1
153	Acute abscess	3
	X. Diseases of the bones and of the organs of locomotion	
156	Diseases of the joints	2
	XIV. External causes	
166	Suicide by corrosive substances	2
171	Suicide by cutting or piercing instruments	1
174	Other suicides	1
175	Poisoning by food	1
179	Accidental burns (conflagration excepted)	4
183	Accidental traumatism by firearms (wounds of war excepted)	1
184	Accidental traumatism by cutting or piercing instruments	2
185	Accidental traumatism by fall	12
187	Accidental traumatism by machines	1
188	Accidental traumatism by other crushing (vehicles, railways, landslides, etc.)	7
194	Excessive heat (sunstroke)	1
197	Homicide by firearms	2
201	Fracture (cause not specified)	4
202	Other external violence (cause not specified)	1
203	Violent deaths of unknown causation	3
	XV. Ill-defined diseases	
205	Causes of death not specified or ill-defined	13
	Total	901
	Causes of death of immigrants at U. S. Marine Hospital No. 43, Ellis Island, N. Y., not included above	20
	Grand total	921

TABLE 6.—*Number of each class of beneficiary discharged from United States marine hospitals and other relief stations during the fiscal year 1927*

Group	Class of beneficiary														
	Total	American seamen	Foreign seamen	U. S. Coast Guard	U. S. Army	U. S. Navy and Marine Corps	Mississippi River Commission	Seamen, U. S. Engineer Corps, and Army Transport Service	U. S. Lighthouse Service	U. S. Coast and Geodetic Survey	U. S. Employees' Compensation Commission	U. S. Veterans' Bureau	U. S. Immigration Service	U. S. Public Health Service officers and employees	Lepers	Miscellaneous
Abnormalities and congenital malformations	35	21		6	1			1			3	3				
Blood and blood-forming organs, diseases and injuries of	43	26	2	3	1					1	1	7	1	1		
Bones and cartilages, diseases and injuries of	1,969	1,228	29	164	4	3		18	23	11	408	69	1	10		1
Circulatory system, diseases and injuries of	1,170	874	11	84	2	2	1	26	22		16	116	1	13		2
Communicable and infectious diseases not including tuberculosis and venereal	1,603	1,034	43	286	4	16	5	59	33	11	5	23	14	70		
Dental	325	217	15	63				3	1	1	5	14	2	4		
Digestive system, diseases and injuries of	2,957	1,868	50	471	11	14	7	105	41	13	14	291	3	65		4
Ear, nose, and throat, diseases and injuries of	3,126	1,648	14	716	5	16	4	70	27	18	10	488	4	105		1
Endocrines, diseases and injuries of	155	105		8				2	3		3	32		2		
Eye and adnexa, diseases and injuries of	471	277	5	63		1		11	9	2	65	28		9		1
Genito-urinary system, diseases and injuries of (exclusive of venereal)	1,410	1,036	26	116	2	4	3	40	24	2	21	107	7	22		
Hernia	1,210	749	5	73		2		27	17	7	250	73	1	6		
Joints and bursae, diseases and injuries of	1,025	653	11	97		4		17	11	6	80	134		10		2
Leprosy	60														60	
Lymphatic system, diseases and injuries of	403	313	15	32		2		4	6	6	6	12	6	1		
Muscles, fasciæ, tendons, and tendon sheaths, diseases and injuries of	1,156	666	10	208	3		1	21	12	1	195	26	1	12		
Nervous system, diseases and injuries of	662	464	7	61	6	1		17	9		23	63	1	7		3
Obstetrics and gynecological conditions	12	7												5		
Parasitic diseases	155	101	2	11			1	4	1			29	1	4		1
Poisonings and intoxications	393	275	1	44		3	2	25	2		23	12		6		
Psychiatric diseases	274	157	3	41				6	1		11	54		1		
Respiratory system, diseases and injuries of (exclusive of tuberculosis)	1,381	873	26	223	3	7	2	54	14	6	8	125	8	31		1
Skin and its appendages, diseases and injuries of	879	568	20	175	1	1		26	13	2	22	36	6	8		1

Tuberculosis	1,031	787	14	33		3	1	16	6	3	11	132	14	6		5
Tumors	397	269		31				17	2		18	51		8		1
Venereal diseases	6,151	4,694	112	749	1	6	7	131	40	16	21	169	189	15		1
Inoculations	26	3	15	7				1								
Under observations	1,019	333	15	182		1		8	6		24	128	316	3		3
Miscellaneous	4,033	2,511	70	445	7	10	6	82	50	10	702	95	10	30		5
Total	33,531	21,757	521	4,392	51	96	40	791	373	116	1,945	2,317	586	454	60	32

TABLE 7.—*Number of days in hospital for patients discharged during fiscal year 1927 from United States Marine hospitals and other relief stations, by broad groups of conditions and class of beneficiary*

Group	Total	Class of beneficiary														
		American seamen	Foreign seamen	U. S. Coast Guard	U. S. Army	U. S. Navy and Marine Corps	Mississippi River Commission	Seamen, U. S. Engineer Corps, and Army Transport Service	U. S. Lighthouse Service	U. S. Coast and Geodetic Survey	U. S. Employees' Compensation Commission	U. S. Veterans Bureau	U. S. Immigration Service	U. S. Public Health Service officers and employees	Lepers	Miscellaneous
Abnormalities and congenital malformations	954	745	--------	109	3	--------	--------	6	--------	--------	65	26	--------	--------	--------	--------
Blood and blood-forming organs, diseases and injuries of	1,746	1,221	47	46	5	--------	--------	--------	--------	2	20	325	5	75	--------	--------
Bones and cartilages, diseases and injuries of	81,311	54,063	2,100	5,241	144	22	--------	934	767	265	14,356	3,229	1	174	--------	15
Circulatory system, diseases and injuries of	64,502	54,504	331	1,889	8	28	19	1,419	1,983	--------	586	3,184	2	346	--------	203
Communicable and infectious diseases, not including tuberculosis and venereal	30,241	21,466	1,074	3,104	31	151	63	1,074	500	191	62	1,124	693	708	--------	--------
Dental	4,674	3,502	282	578	--------	--------	--------	30	2	4	41	120	8	107	--------	--------
Digestive system, diseases and injuries of	61,943	40,514	1,052	7,099	162	273	70	2,368	1,023	188	159	8,078	35	823	--------	99
Ear, nose, and throat, diseases and injuries of	38,633	23,109	253	8,357	31	160	36	628	331	171	109	4,779	48	620	--------	1
Endocrines, diseases and injuries of	8,597	6,217	--------	381	--------	--------	--------	213	140	--------	307	1,262	--------	77	--------	--------
Eye and adnexa, diseases and injuries of	11,480	7,619	27	803	--------	4	--------	1,245	98	45	970	560	--------	97	--------	12
Genito-urinary system, diseases and injuries of (exclusive of venereal)	39,990	29,534	681	1,843	23	148	57	1,513	361	5	208	5,093	126	398	--------	--------
Hernia	36,611	24,163	105	2,148	--------	62	--------	705	536	178	6,224	2,335	6	149	--------	--------
Joints and bursæ, diseases and injuries of	44,798	33,217	206	2,436	--------	27	--------	760	246	198	1,752	5,623	--------	179	--------	154
Leprosy	93,528	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	93,528	--------
Lymphatic system, diseases and injuries of	11,479	9,109	432	572	--------	18	--------	179	157	130	107	583	187	5	--------	--------
Muscles, fasciæ, tendons, and tendon sheaths, diseases and injuries of	22,080	13,417	176	2,890	51	--------	10	409	470	14	4,085	466	1	91	--------	--------
Nervous system, diseases and injuries of	44,998	38,089	344	1,401	103	2	--------	431	154	--------	481	3,774	5	185	--------	29
Obstetrics and gynecological conditions	233	132	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	101	--------	--------
Parasitic diseases	3,889	2,703	38	95	--------	--------	17	96	55	--------	--------	797	11	65	--------	12
Poisonings and intoxications	4,803	3,762	5	213	--------	6	2	250	14	--------	207	284	--------	59	--------	1
Psychiatric diseases	15,103	12,165	10	885	--------	--------	--------	521	2	--------	237	1,261	--------	22	--------	--------

Respiratory system, diseases and injuries of (exclusive of tuberculosis)	40,003	28,837	408	3,232	50	232	48	958	254	134	377	4,644	153	654	--------	22
Skin and its appendages, diseases and injuries of	20,865	14,789	295	2,459	10	7	--------	857	316	9	872	920	134	62	--------	135
Tuberculosis	151,601	137,351	1,037	3,736	------	308	153	1,992	511	99	847	4,198	508	758	--------	103
Tumors	16,097	12,722	--------	676	------	--------	--------	573	91	--------	444	1,245	--------	268	--------	78
Venereal diseases	216,559	171,201	4,082	18,652	23	100	238	3,852	1,297	388	444	10,663	5,178	426	--------	15
Inoculations	53	9	30	12	------	--------	--------	2	--------	--------	--------	--------	--------	--------	--------	--------
Under observations	5,476	2,790	126	1,155	------	3	--------	103	40	--------	180	670	372	26	--------	11
Miscellaneous	67,317	44,226	1,658	5,397	18	88	48	1,033	789	369	10,465	2,874	152	190	--------	10
Total	1,139,564	791,176	14,799	75,409	662	1,639	761	22,151	10,137	2,390	43,605	68,117	7,625	6,665	93,528	900

NOTE.—Immigration patients at U. S. Marine Hospital No. 43, Ellis Island, N. Y., not included in this table.

TABLE 8.—*Classification of out-patient treatments furnished at United States marine hospitals and other relief stations, fiscal year 1927*

Station	General medical	Dental	Eye, ear, nose, and throat	Neuropsychopathic	Tuberculosis	Surgical	Genito-urinary	Inoculations and vaccinations	X-ray	Physiotherapy	Total
Marine hospitals	66, 528	48, 863	26, 600	80	627	106, 777	43, 345	3, 560	3, 070	35, 045	334, 495
Relief stations	80, 301	13, 480	13, 300	163	306	67, 197	29, 542	7, 605	1, 986	9, 702	223, 582
Coast Guard vessels	23, 048	9, 171	5, 415	64	30	14, 417	4, 377	3, 877	77	372	60, 848
Contract physicians	8, 912	72	951	3	12	1, 682	151	1, 613	1	19	13, 416
Grand total	178, 789	71, 586	46, 266	310	975	190, 073	77, 415	16, 655	5, 134	45, 138	632, 341

DIVISION OF VENEREAL DISEASES

In charge of Asst. Surg. Gen. Thomas Parran, Jr.

When the nation-wide campaign for venereal disease control was actively initiated nine years ago, the Public Health Service and other governmental agencies bore a large share of the responsibility and expense in connection with this movement. Progressively since that time the States and political subdivisions thereof have assumed an increasing share of the responsibility and a logical division of the effort has been evolved. Since 1925 no appropriations have been available for allotments to States, and the actual conduct of venereal disease control measures in the States has become a State and local function. The logical field of activity of the Public Health Service has been (*a*) to carry out clinical, field, and laboratory researches into various aspects of the venereal diseases which have a national significance; (*b*) to serve in an advisory capacity to the States; and (*c*) to collect, interpret, and disseminate to health authorities, the medical profession, and the public generally information concerning scientific and practical methods. So far as has been possible with an appropriation of $70,000, this was done during the fiscal year 1927.

Many activities not otherwise possible were carried on through the cooperation of scientific institutions, volunteer agencies, health officials, and others, to all of whom grateful acknowledgment is made.

Of particular value has been the advice of a number of leading specialists in syphilis and gonorrhea, who have given freely of their time in consulting with the Public Health Service concerning important phases of venereal disease control which require attention by the Federal Government. At a conference called by the Surgeon General in Washington in May, 1927, valuable suggestions were given concerning researches most needed in syphilis and gonorrhea and methods of stimulating and developing these researches; methods for securing more adequate instruction and training in syphilis and gonorrhea for medical students and physicians; methods for promoting more general recognition and more effective treatment of maternal and congenital syphilis; the development of more adequate clinic facilities and higher standards of clinic service; and improved methods for public health authorities in connection with public education concerning the venereal diseases.

Researches

During the year a number of new activities were undertaken and existing work expanded in connection with researches in the venereal diseases. These studies may be divided broadly into (*a*) clinical and laboratory investigations of more effective methods of diagnosis and treatment of syphilis and gonorrhea; (*b*) field studies and demonstrations of the prevalence of the venereal diseases, of clinic operation, of effective educational methods, and of social problems affecting the incidence of these infections; and (*c*) statistical studies and analyses.

CLINICAL AND LABORATORY STUDIES

Hot Springs.—The work at the Hot Springs venereal disease clinic has increased, necessitating additional personnel, some of which is being supplied temporarily by the National Park Service. Researches in a number of problems of clinic administration and chemotherapy have been continued. Of particular interest has been the influence of an increase in body temperature from hot baths as a therapeutic measure. Two studies are now under way on new bismuth preparations.

During the year 4,757 patients were examined, of whom 3,682 had a venereal disease. These patients received 58,489 treatments. This compares with 55,051 treatments during the previous year. In the laboratory the bacteriologist completed a total of 5,000 Kahn tests run parallel with the regular Wassermanns. A report of the findings is in process of completion. A dental department was organized under a volunteer worker who during a period of three months gave 2,949 treatments, including prophylaxis, extractions, and minor dental operations. This service proved of great value to the clinic but was terminated because of the removal of this dentist to another location.

Twenty-six students completed a special 30-day course of training at this clinic during the year. These physicians are given this instruction upon the request of the several State health departments.

At the request of the National Park Service physical examinations were made at the clinic of all new employees and a monthly examination was made of all bath attendants. A total of 2,700 such examinations were made during the year. A detailed statistical report of the activities of this clinic is given in Table No. 1, page 296.

Special investigations.—In connection with a number of leading specialists and scientific institutions several studies were initiated. At the University of Pennsylvania a study was begun to determine the value of nonspecific protein therapy in syphilis. Treatment by intravenous injections of mixed typhoid vaccine was the first method tried. This is being used alone and in conjunction with the arsphenamines in early and late syphilis.

In an extension of existing work at the Johns Hopkins University a study was begun concerning immunity to various methods of treatment.

At the McCormick Institute for Infectious Diseases and the Illinois Social Hygiene League a research was undertaken in connection with improved methods for the diagnosis and treatment of gonorrhea. Preliminary work had indicated that toxin could be produced by the growth of the gonococcus, and efforts are being made to produce an antiserum to determine if a skin test can be developed for diagnosis and to test the value of the gonotoxins in treatment.

At St. Louis, in connection with the Barnard Free Skin and Cancer Hospital, a study was undertaken in testing various methods for the pyrexial treatment of syphilis. The above researches have been under way only a few months and it is too early to evaluate the results.

At the Hygienic Laboratory a special expert was employed for the last few months of the fiscal year to extend certain previous investigations which have been made at the laboratory in connection with rabbit syphilis.

Arrangements were made for the detail of an experienced officer to Stapleton Marine Hospital to study methods of treatment of syphilis and gonorrhea, with the view particularly to shortening, if possible, the present period necessary for cure of these diseases. Since a considerable percentage of the work in the marine hospitals is on account of the venereal diseases, any success in the prevention and improved treatment of these diseases would effect a very direct saving to the Government.

FIELD STUDIES

Prevalence of the venereal diseases.—One of the most serious obstacles in venereal disease control is the fact that no accurate information is available as to the prevalence of gonorrhea and of syphilis in the general population or the trend of new infections. Evidence has accumulated from many sources that the incidence of syphilis, and to a less extent of gonorrhea, is decreasing, but there are no irrefutable statistics by which this can be proven. Information is available from hospitals as to the percentage of patients who show a positive Wassermann reaction. This group, however, is not representative of the population as a whole. The reporting of the venereal diseases is not sufficiently complete to warrant definite conclusions. After a careful study of possible methods of obtaining accurate information as to the prevalence of these diseases in the general population, it was determined to follow, with some modifications, the plan recently used by the American Social Hygiene Association in two large cities. The method used was to take a census of all cases under treatment at the hands of every physician, hospital, and other institution in the city on a given date. The physicians and the institutions were asked to report the total number of cases of gonorrhea and of syphilis, classified by sex and by stage of the disease, which were actively under observation or treatment. In every case indorsement of the plan was secured from the State and local health authorities and from the local medical profession, after which a questionnaire was sent to every physician and institution in the city. To those who did not make a reply personal visits were made in order that a complete return could be secured.

During the fiscal year these studies were completed in Cleveland, Ohio; Eldorado and Texarkana, Ark.; Decatur, the La Salle District, Morgan County, and Peoria, Ill.; Huntington, Wheeling, Greenbrier County, and Logan County, W. Va. Arrangements were effected to carry out a similar study in Syracuse and in Cattaraugus County, N. Y.; New Haven, Conn.; in a number of rural communities in Kansas; in Portland and five counties in Oregon; in Madison and a number of other cities in Wisconsin.

In Table No. 2 is shown the combined incidence of gonorrhea and syphilis in these communities and of each disease separately. In Table No. 3 is shown the incidence of syphilis by sex and stage of the disease in these communities. In the cities the incidence of the diseases under treatment varied between 1 and 2 per cent of the population. In the smaller towns and rural areas the rate was considerably lower. It is not known whether this represents a true difference, whether the diseases are recognized less frequently in the rural areas, whether most of the cases seek treatment in cities on account of the privacy afforded, or whether there is a combination of these factors.

It is of interest to note that a large percentage of total cases under treatment were under the care of private physicians. Even in the larger cities less than one-third of the cases were being treated in clinics and other institutions. A complete analysis of the data and its interpretation will be published during the coming fiscal year.

Of even more importance than determining the prevalence of the venereal diseases is the fact that the information gathered in these studies of prevalence will furnish a base line from which the trend in future years may be measured. Once this is done, a more accurate measure can be had of the effectiveness or ineffectiveness of various community programs for the control of these infections.

Improved treatment facilities.—In Kentucky the effort which was begun in the previous year to develop more adequate treatment facilities in the smaller towns and rural districts was continued. The results of this effort have been very satisfactory in that in communities too small to support an organized clinic competent physicians have been appointed by the State board of health as " cooperative clinicians " to treat indigent cases of venereal disease. A similar system has been developed by the State health departments of Alabama and Connecticut and to a lesser extent in other States.

At the request of the New Jersey State Health Department an officer was assigned to study the venereal disease clinics in that State and to recommend improved and standard methods of clinic operation. Particular attention was paid to the coordination of venereal disease clinic activities with those of the local health departments. In Minnesota venereal disease control methods were studied and suggestions made concerning a future program. Similar advice was given to the State health authorities in Illinois concerning venereal disease control work in that State.

In cooperation with the office of municipal health department practice a study was made of the venereal disease activities carried on by the District of Columbia Health Department and of the diagnostic and treatment methods and follow-up at the nine venereal disease clinics operated in connection with Washington hospitals.

Information was collected as to the names and locations of all the venereal disease clinics in the United States, and from nearly 400 which are " cooperative clinics " more detailed information was secured concerning the facilities which they offer for the treatment of the venereal diseases. This information was published in the July issue of " Venereal Disease Information."

Educational and sociological studies.—In Indiana the effort which was begun in the previous year to study the relation between venereal diseases and juvenile delinquency and to work out improved methods of venereal disease control through probation and custodial agencies was continued.

In Florida and Tennessee practical demonstrations were carried out at the request of the respective State health departments in methods of interesting parent-teacher associations and similar groups in community aspects of venereal disease control. In New York methods of introducing sex education in high schools and normal schools were conducted in cooperation with the State health department.

Educational work among the negro population was continued during the year in Alabama, Tennessee, and Pennsylvania in an effort to develop more satisfactory methods of interesting this group in venereal disease control methods. In cooperation with other divisions of the bureau assistance was given in the promotion of National Negro Health Week.

STATISTICAL STUDIES

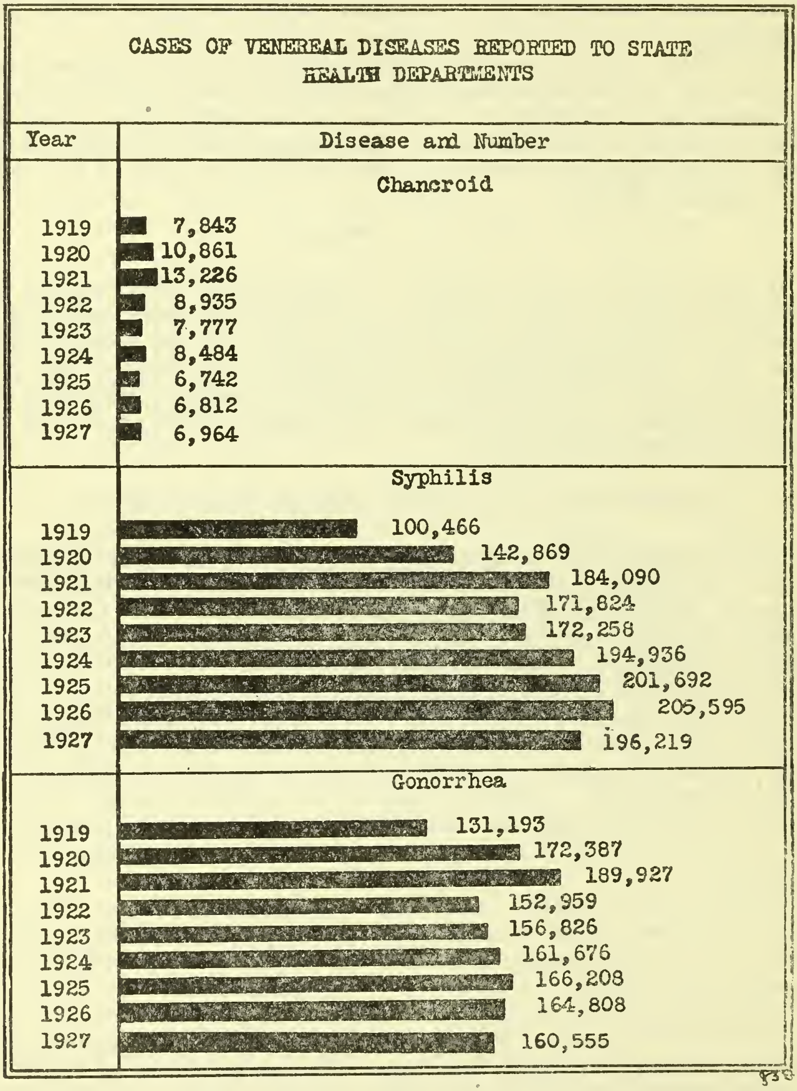
Owing to limited appropriations a comparatively small amount of statistical analyses was possible. A statistical analysis was made of several hundred thousand morbidity reports of the venereal diseases with particular reference to determining the present age and sex distribution of new infections in order to compare present findings with those of previous years. The results of this study will be published at an early date.

Cooperative Work of State Health Departments

It is in keeping with the general policy of the Public Health Service to assist States in the initiation and development of public health measures, leaving to them finally the responsibility for the actual conduct of these measures. In the case of venereal disease control, financial assistance of the Federal Government was terminated so rapidly by reason of drastic cuts in appropriations that many of the States were unable to assume the full burden which was suddenly imposed upon them. Other States, more fortunate in appropriations or in the responsiveness of public sentiment, have been able to continue and to expand the effectiveness of their venereal disease control efforts. Appropriations for the Division of Venereal Diseases for each fiscal year since its establishment are shown in Table No. 4, page 298.

Present plan of work.—Although venereal disease control programs have been financed entirely by the States for the past several years, very active cooperation and liaison have been maintained between them and the Division of Venereal Diseases. In addition to research activities, an important function of this division has been to advise with the several States, to the extent that limited appropriations have permitted, concerning more effective measures of venereal disease control; to demonstrate upon request particular phases of this program which have proved effective; to prepare and distribute educational material; to disseminate information to health officials, the medical profession, and the public generally concerning various aspects of the venereal diseases; to compile and distribute among all the States information received from each; to study the venereal disease problem in particular communities, and to recommend more effective control measures.

Since the establishment of the division, 3,105,952 cases of the venereal diseases have been reported by State health departments; nearly 800 clinics have been established, at which 1,023,326 patients have received 16,330,994 treatments. In addition, 62,594 lectures have been given to audiences totaling 8,530,205 persons, and 34,676,512 pieces of literature have been distributed.

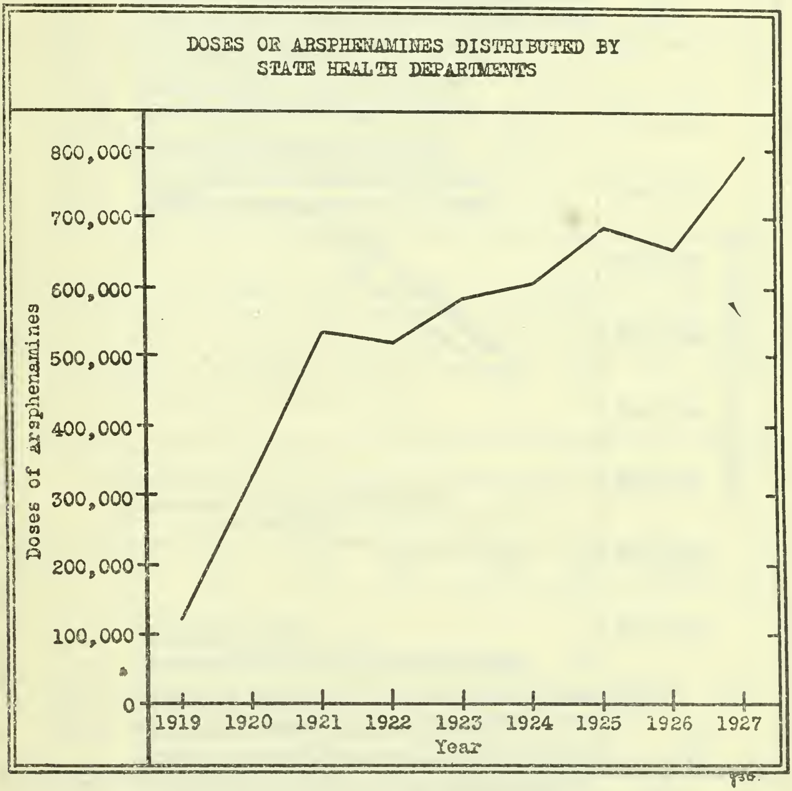

CASES OF VENEREAL DISEASES REPORTED TO STATE HEALTH DEPARTMENTS

State control measures.—As compared with the previous year, 1927 showed an increase in medical measures being carried out by State health departments. During the fiscal year 1927, 196,219 cases of syphilis and 160,555 cases of gonorrhea were reported. This represents a slight decrease from the previous year.

There has been a gradual increase in the number of doses of the arsphenamines administered by State health departments, nearly 800,000 doses being distributed during the year.

Another service which the State health departments are rendering in an increasing amount each year is the laboratory work for diagnosis and treatment control. The number of Wassermann tests made in 1927 was 869,864, a reported increase of 25.8 per cent over the previous year. Laboratory examinations for the gonococcus made in State laboratories totaled 237,167.

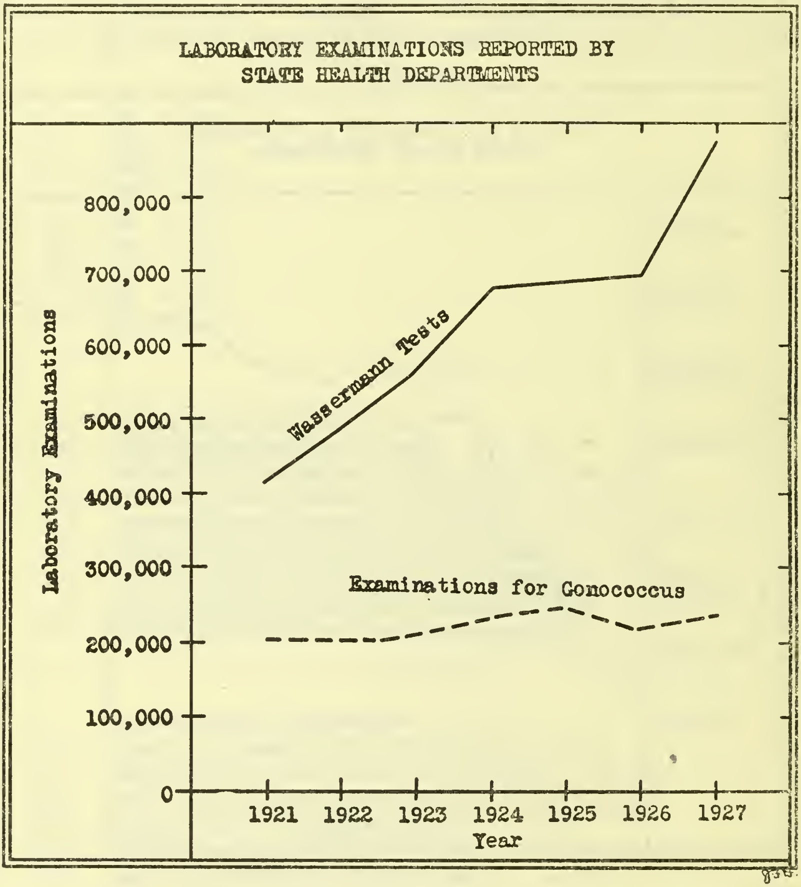
A detailed report of activities by States in the control of venereal diseases is given in Tables Nos. 5 and 6, pages 299 and 300.



DOSES OF ARSPHENAMINES DISTRIBUTED BY
STATE HEALTH DEPARTMENTS

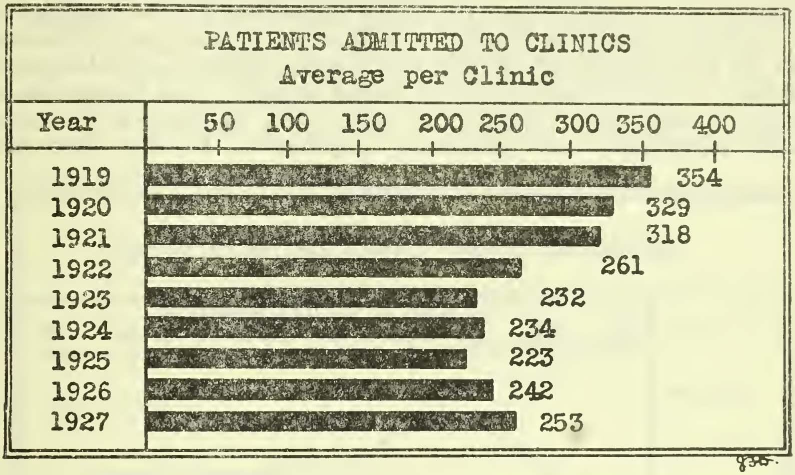
Cooperative venereal disease clinics.—A comparison by States of the volume of venereal disease clinic service, as adjudged by new cases admitted and by the number of treatments given per thousand inhabitants, is shown in Table No. 7, page 301. The number of new patients admitted averaged 1.02, and the treatments 18.56 per thousand inhabitants. Alabama takes first place in the volume of clinic service rendered to the people. A considerable part of the clinic work in this State is given by cooperative clinicians, of whom there are 183 located in the smaller towns of the State in which the population is not sufficient to support an organized venereal disease clinic.

A detailed report of clinic activities is given in Table No. 8, page 301. From this table it will be noted that no reports are received from some of the larger centers of population in which the venereal disease clinics make no reports to the city and State health authorities. The number of cooperative venereal disease clinics reporting in 1927 was 425, as compared with 416 for the previous year. The peak in the number of clinics reporting was reached, however, in 1922, when there were 541 cooperative clinics. The average number of patients admitted to each clinic during the year was 253, of whom less than half (105) were discharged as probably cured.

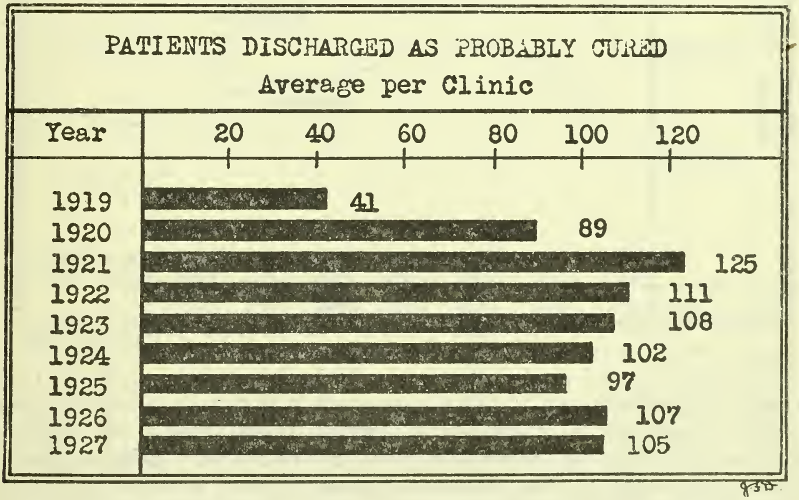


The 425 clinics are located in 41 States. Arizona, Idaho, Nevada, and South Dakota have no cooperative clinics. No reports were received from the District of Columbia or Utah, while in Iowa and Vermont the State health departments are not able to secure reports from the venereal disease clinics in those States. New admissions to these clinics totaled 107,688 cases, of which 61,445 were syphilis, 43,219 gonorrhea, and 3,024 chancroid.

The total number of treatments given to these patients amounted to 1,964,233. The number of treatments given during each year since 1919 is shown in the chart on page 293.

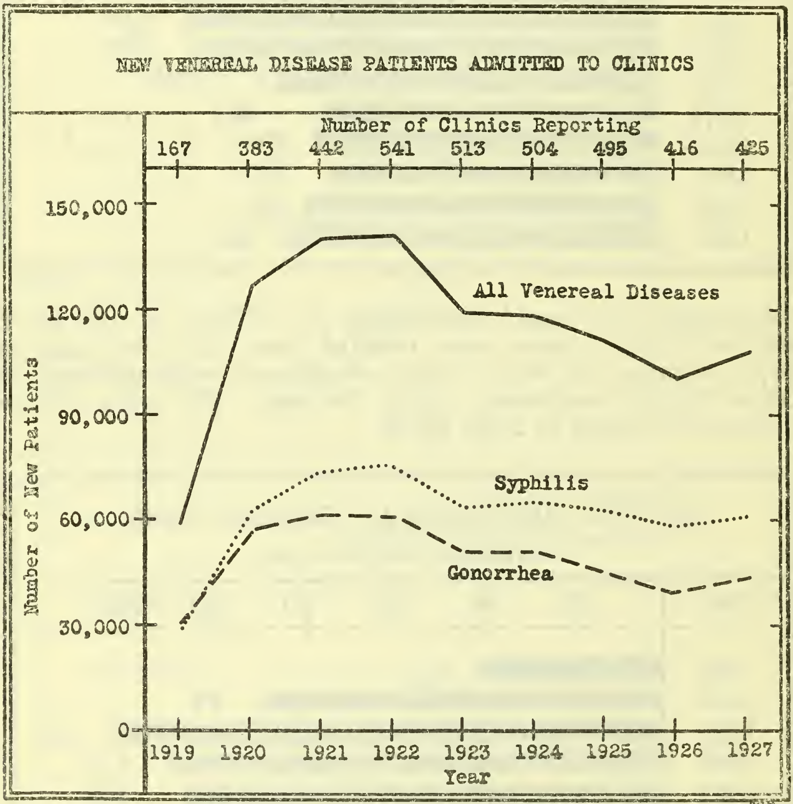


Correctional and penal institutions.—In addition to the 425 coöperative clinics, reports were received from 39 correctional and penal institutions, to which 7,860 new patients were admitted who received 305,580 treatments during the year. The work of these institutions is shown in Table No. 9.

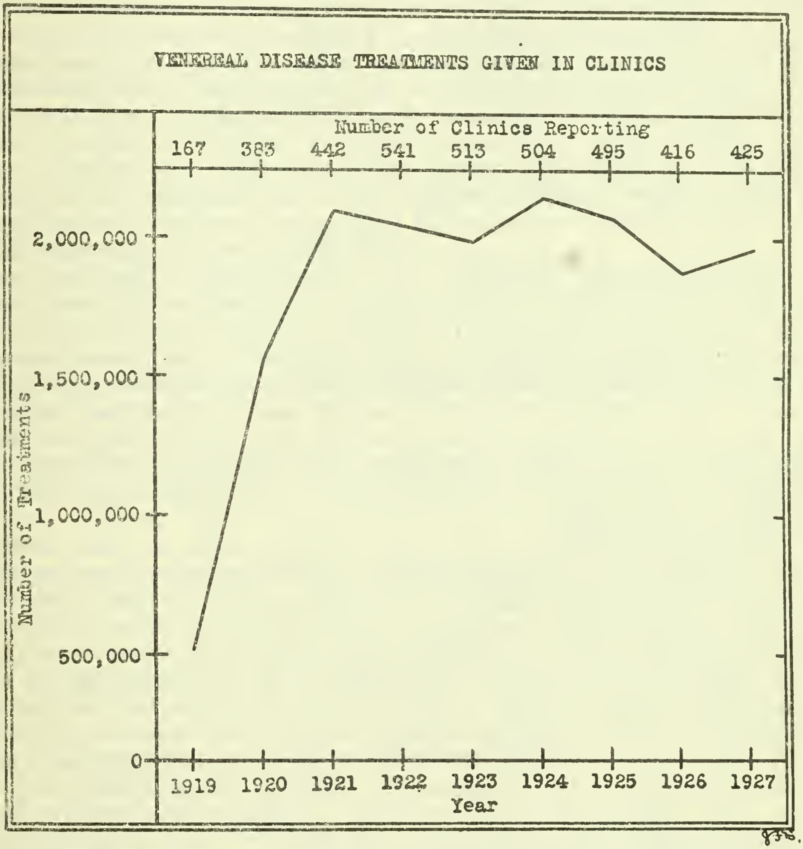


Outstanding features of State activities.—It is not possible in the confines of this report to give a comprehensive résumé of the work in the several States. It may be of interest, however, to mention a few of the accomplishments with no attempt to make a complete report.

In New York the service assisted in extending the comprehensive educational program which is being carried out in the high schools and teachers' colleges and among commercial and other organizations and the public generally. In Pennsylvania the activities of the State police in cooperating with health authorities for the suppression of commercialized vice resulted in the arrest of many sex offenders, and the examination of all male and female offenders, and the quarantine or parole of all who were found infected. In Minnesota an extensive consultative service has been built up between the State health department and practicing physicians. In this State the active assistance of many physicians is had in securing from their patients information as to the source of infection, and the interest of the patient has been elicited in getting these sources of infection under treatment. In Minnesota, also, the consistent effort to decentralize responsibility for venereal disease control to local communities has met with gratifying success. In Alabama practically every community in the State is provided with facilities for the treatment of indigent cases of venereal disease through a system of cooperative clinicians. One hundred and eighty-three physicians are cooperating with the State board of health in this manner. Kentucky has developed a similar plan.



In New Jersey the insistence of the health authorities in ascertaining from all physicians the sources of the infection and the activity of the State health department in following up these sources to get them under treatment is demonstrating the soundness of this method of approach. In West Virginia and in North Carolina county health officers have taken a leading part in furnishing treatment to infected persons. In a number of States the State laboratories conducted researches as to the comparative value of the Wassermann and Kahn tests for the diagnosis of syphilis. As a result of these studies Michigan, where the Kahn test was originated, Illinois, Ohio, and West Virginia have adopted the Kahn as the standard diagnostic method for this disease. In Virginia, with limited appropriations, a well-planned effort has been made to introduce courses in sex instruction into the State teachers college, the view being held that sex education could not be taught in schools until properly qualified teachers were available and that instruction necessary to qualify the teachers could be given most economically in the teachers college. In Mississippi intensive interest has been aroused in a " Keeping Fit " campaign among the high schools and colleges.



Educational Activities

The publication of the monthly journal, Venereal Disease Information, was continued and its size increased to enable the inclusion of important material which heretofore was of necessity eliminated. A compilation of abstracts of literature on malaria treatment of general paralysis was issued during the year, which met a large demand for information on this phase of venereal disease control.

Sex education in high schools.—During the fiscal year 1927 emphasis in educational work was placed on the program for sex education in high schools. One of the most important activities was the nation-wide survey of the content of high-school curricula. A similar study had been made in 1920, the results of which were published in Venereal Disease Bulletin No. 69, The Status of Sex Education in High Schools. It was believed advisable again to study this subject in order that information might be secured to indicate what progress had been made, what methods had proven effective, and what drawbacks had been brought out in the campaign for integrating sex education with existing high-school courses. Accordingly, a questionnaire was prepared and distributed among the more than 17,000 high schools throughout the United States. Questions were asked as to the various courses of study included in the curriculum, and information was sought particularly as to the method being followed in giving sex instruction in connection with established courses. The various aspects of sex instruction which were considered included human reproduction, the physiological and psychological significance of the internal secretions of sex glands, the physiology of menstruation and of seminal emissions, the personal and community aspects of the venereal diseases, heredity and eugenics, and similar phases of sex hygiene.

High-school principals were also asked to state in what courses and in what year this interpretation was given; whether it was to boys or girls, or both; and whether it was given by the regular instructor, by lectures, by outside speakers, by classroom discussion, or by individual conferences. In addition, information was asked as to what the schools were doing to aid pupils in an understanding of the emotions and their control; what provision was made for the healthy expression of the emotional life of the pupil; and what was done to interpret and elevate the standards of boy-girl relationships in the school building, on the playground, or through extracurricular activities. The opinion of the principal was asked as to the need for, and the importance of, including sex education in courses now in the curriculum of the high school, and information was sought as to the attitude of the public toward this work.

More than 6,500 completed replies were received. The material gained by this study has been coded and is now being tabulated and analyzed. The results will be published in bulletin form at an early date. It was encouraging to note a tendency on the part of the high schools to undertake the integrated method of sex instruction whereby the topics were presented in connection with existing courses. High-school principals, generally, emphasized the need for sex instruction, stating that they felt it more essential now than at any previous time. It was surprising to learn, however, that a large number of high-school principals stated that, while they were favorably disposed toward the inclusion of sex instruction, it was impossible for them to inaugurate the plan due to the lack of properly trained teachers. More than 4,000 of the high schools requested publications, exhibits, and other assistance so that they might undertake this work or improve the program which they were already carrying on.

Work with summer schools.—Consideration of the returns of the high-school questionnaire indicated so strongly the need for adequately trained teachers before high schools could properly undertake the work of sex education that the service at once sent letters to summer schools throughout the United States asking if they desired to undertake courses for training teachers to teach sex. Courses of study: copies of the manual, High Schools and Sex Education; copies of the exhibit for teachers, Adolescence and Sex Education; and other materials for reference work or collateral reading were offered for use. The response to this proffer was accordingly large. More than 200 summer schools stated that they would undertake during the 1927 summer-school session a course in teacher training, and more than 400 schools requested 3,600 copies of the materials for use or reference.

An interesting aftermath of the work among summer schools is the considerable number of requests received from summer-school students asking that they be supplied with the material with which they have become acquainted during the summer school session, so that upon their return to their teaching positions they will be better able actively to undertake measures for including sex instruction in the high school.

Educational work through newspapers, periodicals, etc.—During the fiscal year 1927 the division continued the preparation and distribution to newspapers of releases dealing with the problem of venereal disease control. The public press cooperated in the publication of five news releases relating to various aspects of sex education and venereal disease control. In fact, the response to the release, Keeping Fit, resulted in the distribution of more than 60,000 copies of the publication and because the personnel of the division was too limited to fill the demand for publications this method of education necessarily has been abandoned for the time being. It is hoped that this activity can at a later time be resumed and that the public demand for this material can to some extent be satisfied.

New publications.—During the year 1927 the following new publications were issued:

Venereal Disease Bulletin No. 82. This publication was in the form of a four-page circular and order blank describing the bound volume, Venereal Disease Manual for Social and Corrective Agencies. Fifteen thousand copies were distributed to nurses' organizations, probation officers, hospitals, etc. The publicity given the manual resulted in the sale by the Government Printing Office of approximately 4,000 copies at 50 cents each.

Venereal Disease Bulletin No. 83, You and Your Boy. This was a revision of the earlier publication (V. D. B. 71). A slight modification was made in the presentation of the material and an extra leaf added to be used as a request form. Ten thousand copies were secured and distributed among parent-teacher groups, women's organizations, etc. A very general response to this circularization was made which resulted in the distribution of a large number of publications.

Venereal Disease Bulletin No. 84, Catalogue of Educational Material. This publication contains a brief description of the various pamphlets, periodicals, card exhibits, motion-picture films, etc., prepared under the direction of the Public Health Service. The material is arranged according to the various facilities and is further classified according to interested groups, such as parents, teachers, physicians, etc. Five thousand copies of this publication have been distributed to State boards of health and other interested organizations. It has been found of considerable value in promoting the economical distribution of material available for use in venereal disease control.

Venereal Disease Bulletin No. 85, Where Away. This publication was prepared in cooperation with the hospital division for distribution primarily among merchant seamen and beneficiaries of the service. Fifty thousand copies of this publication were printed, of which 41,000 have been distributed to marine hospitals, relief stations, Coast Guard stations, etc.

Venereal Disease Bulletin No. 86, Sex Education.—A symposium for Educators. This publication, containing 58 pages, presents for the first time a series of articles on the various aspects of the problem of sex education. The articles were contributed by authorities on the problem of sex education and social hygiene throughout the United States. Twenty thousand copies of this publication were secured, of which 8,000 have been distributed to high schools, normal schools, parent-teacher groups, etc. The preparation of teachers to use sex for character education, progress in sex education, sex education as a factor in mental hygiene, the rôle of the home and the school in sex education, the part of civic organizations in developing sex education in schools, and the progress of sex education programs in foreign countries are the more important topics presented.

TABLE 1.—*Report of United States Public Health Service clinic at Hot Springs National Park, Ark., from July 1, 1926, to June 30, 1927*

Total physical examinations	4, 757
Nonvenereal	1, 075
Venereal	3, 682
Syphilis	2, 504
New cases	2, 034
Readmitted cases	470
Gonorrhea	1, 178
New cases	1, 048
Readmitted cases	130
Syphilis	2, 504
Primary	222
Secondary	128
Tertiary	1, 854
Neuro	256
Conginital	44

Gonorrhea	1,178
Acute	174
Chronic	1,004
Total treatments given	58,489
Syphilis	37,401
Gonorrhea	21,088
Doses of arsphenamine administered	12,260
Laboratory examinations	8,561
Wassermann tests	6,285
Dark-fields	222
Examinations for gonococcus	2,054
Miscellaneous examinations	12,142
Kahn tests	5,294
Urine tests	5,265
Renal function tests	754
Examinations for malaria	141
Special sections for histopathology	14
Special chemical examinations for blood sugar	13
Blood counts	88
Special water analyses for Interior Department	336
Liver function tests	2
Cystoscopic examinations	82
Endoscopic examinations	124
Spinal punctures for diagnosis	29

TABLE 2.—*Cases and rates per thousand of gonorrhea and syphilis and for each disease separately, as shown by a census of all cases under treatment by physicians and institutions on a given date*

Name of city	Population	Gonorrhea and syphilis		Gonorrhea		Syphilis	
		Total cases	Rate per thousand	Total cases	Rate per thousand	Total cases	Rate per thousand
Detroit [1]	1,334,500	16,735	13.47	8,070	6.50	8,665	6.98
Peoria	83,500	1,303	15.60	671	8.04	632	7.57
Decatur	56,000	820	14.64	355	6.34	465	8.30
Eldorado	30,000	315	10.50	178	5.93	137	4.57
Texarkana	23,300	378	16.22	182	7.81	196	8.41
Huntington	66,900	702	10.49	269	4.02	433	6.47
Wheeling	56,208	700	12.46	283	5.04	417	7.42
La Salle	28,600	58	2.03	34	1.19	24	.84
Green Brier County	27,300	23	.84	8	.29	15	.55
Logan County	61,500	589	9.58	319	5.19	217	4.39
Morgan County [2]	32,900	108	3.28	40	1.22	68	2.07
Atlanta [1]	235,000	4,596	19.56	2,049	8.72	2,547	10.84

[1] Data from American Social Hygiene Association.

[2] Incomplete.

TABLE 3.—*Cases and rates per thousand of syphilis, by sex and stage of disease, as shown by a census of all cases under treatment by physicians and institutions on a given date*

Name of city	Male						Female					
	Total		Acute		Chronic		Total		Acute		Chronic	
	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Detroit [1]	5,452	7.71	2,065	2.92	3,387	4.79	3,213	5.12	988	1.57	2,225	3.55
Peoria	381	9.16	64	1.54	317	7.62	251	5.98	22	.52	229	5.46
Decatur	293	10.55	76	2.77	217	7.81	172	6.09	37	1.31	135	4.78
Eldorado	106	7.33	58	4.01	48	3.32	31	1.99	13	.84	18	1.16
Texarkana	135	11.94	54	4.78	81	7.16	61	5.09	20	1.67	41	3.42
Huntington	264	7.86	100	2.98	164	4.88	169	4.77	46	1.38	123	3.69
Wheeling	234	8.53	96	3.50	138	5.03	183	6.36	46	1.60	137	4.76
La Salle	17	1.16	7	.48	10	.68	7	.15	1	.07	6	.43
Green Brier County	10	.72	4	.29	6	.43	5	.37	0	.00	5	.37
Logan County	166	4.85	72	2.10	94	2.75	104	3.81	23	.84	81	2.97
Morgan County [2]	48	2.98	6	.37	42	2.61	20	.73	2	.07	18	.66
Atlanta [1]	1,440	12.74	657	5.81	783	6.93	1,107	9.07	442	3.62	665	5.45

[1] Data from American Social Hygiene Association.

[2] Incomplete.

TABLE 4.—*Appropriations for the maintenance of the Division of Venereal Diseases and for allotments to States for venereal disease control work*

Fiscal year	For maintenance and expenses Division of Venereal Diseases	For allotments to State health departments	Fiscal year	For maintenance and expenses Division of Venereal Diseases	For allotments to State health departments
1919	$200,000	$1,000,000	1924	$127,353	$100,000
1920	200,000	1,000,000	1925	124,000	25,000
1921	200,000	450,000	1926	75,000	None.
1922	200,000	None.	1927	75,000	None.
1923	175,000	225,000	1928	70,000	None.

TABLE 5.—*Activities of State health departments for the control of venereal diseases, July 1, 1926, to June 30, 1927*

State	Doses of arsphenamines administered	Laboratory examinations			Number of bulletins and pamphlets distributed	Lectures, films, exhibits, and slide showings	
		Wassermann (or other similar) tests	Microscopic examinations for treponema pallidum	Microscopic examinations for gonococcus		Number	Average attendance
Total	783,377	869,864	11,505	237,167	927,472	[1] 4,776	115
Alabama	41,395	72,935	253	2,963	26,782	196	92
Arizona	---------	---------	---------	---------	---------	---------	---------
Arkansas	17,654	11,830	254	2,942	20,040	446	123
California	53,595	52,960	879	6,768	24,944	41	120
Colorado	2,426	5,195	37	3,843	2,295	8	33
Connecticut	13,083	28,913	120	3,574	6,067	8	58
Delaware	2,214	1,429	---------	486	---------	---------	---------
District of Columbia [2]	---------	---------	---------	---------	---------	---------	---------
Florida	11,660	3,230	18	2,547	---------	---------	---------
Georgia	46,071	42,064	---------	1.516	5,600	[1] 53	107
Idaho	1,393	6,686	---------	1,489	1,246	---------	---------
Illinois	50,478	56,633	2,373	44,888	86,312	17	284
Indiana	55,042	28,408	75	4,670	24,622	34	75
Iowa [3]	---------	17,356	4	1,164	---------	---------	---------
Kansas	8,842	11,820	5	3,098	5,389	---------	---------
Kentucky	18,156	6,964	92	1,506	20,446	49	358
Louisiana	18,837	12,054	166	4,365	10,136	13	82
Maine	2,426	5,269	1	4,014	2,895	209	111
Maryland	15,696	3,902	72	4,043	3,500	3	53
Massachusetts	52,305	67,067	---------	5.261	4,423	134	79
Michigan	22,501	33,372	4.034	29,947	---------	---------	---------
Minnesota	7,789	48,202	258	8,684	16.917	124	102
Mississippi	9,021	17,868	---------	674	6,681	[4] 208	167
Missouri	40,159	7.698	28	2.240	8,032	6	343
Montana [5]	293	7,810	---------	564	1,243	44	65
Nebraska	8,744	17,900	25	2,823	45,437	4	75
Nevada [6]	---------	1,191	4	385	---------	---------	---------
New Hampshire	2,318	2,039	---------	587	576	4	103
New Jersey	17,017	24,033	1	3,895	97,571	303	117
New Mexico [7]	---------	1,180	---------	77	581	---------	---------
New York	49,606	87,651	60	8,048	148,938	861	119
North Carolina	7,682	3.675	---------	55	---------	---------	---------
North Dakota	22	---------	---------	---------	1,730	---------	---------
Ohio [8]	46,606	36,875	1,292	16,751	763	---------	---------
Oklahoma [9]	1,185	322	---------	200	---------	---------	---------
Oregon	1,744	4,883	143	3,070	253	---------	---------
Pennsylvania	28,561	43,084	---------	9,948	11,654	289	138
Rhode Island	13,731	7,738	23	3,834	58,448	30	296
South Carolina	5,747	1,507	374	5,080	1,920	119	57
South Dakota	---------	3,900	---------	---------	---------	---------	---------
Tennessee	22.596	33,361	299	4,823	14,025	150	152
Texas	56,275	6,416	---------	10,726	23,005	---------	---------
Utah [2]	---------	---------	---------	---------	---------	---------	---------
Vermont	57	3.570	---------	1,056	235	---------	---------
Virginia	10.362	7,621	112	2,064	22,175	303	155
Washington	3,785	21,017	92	13,097	977	---------	---------
West Virginia	9,209	3,312	---------	2,657	106,605	347	157
Wisconsin	7,092	8,914	411	6,734	55,009	773	43
Wyoming [10]	2	10	---------	11	---------	---------	---------

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[1] Exclusive of 3 radio lectures; estimated that 200,000 persons listened in.

[2] Not reporting.

[3] Information available for 4 months only.

[4] Mississippi State health department conducted a "Keeping Fit" essay contest among 256 high schools; essays were written by 17,054 pupils.

[5] For 11 months.

[6] For 6 months.

[7] For 9 months.

[8] From reports of clinics and correctional institutions.

[9] For 4 months; from clinic reports.

[10] For 3 months; from clinic reports.

TABLE 6.—*Cases of venereal disease reported to State health departments and total venereal disease incidence per 1,000 inhabitants, July 1, 1926, to June 30, 1927*

State	Syphilis	Gonorrhea	Chancroid	All venereal diseases	
				Number of cases	Annual rate per 1,000 inhabitants
Total	196, 219	160, 555	6, 964	363, 738	3. 15
Alabama	7, 710	3, 846	287	11, 843	4. 65
Arizona	[1] 66	[1] 60	[1] 3	[1] 129	. 56
Arkansas	3, 418	1, 636	27	5, 081	2. 64
California	10, 013	7, 640	47	17, 700	3. 99
Colorado	564	1, 343	39	1, 946	1. 81
Connecticut	1, 090	1, 450	1	2, 541	1. 55
Delaware	336	495	87	918	3. 78
District of Columbia [2]	----------	----------	----------	----------	----------
Florida	5, 053	1, 632	215	6, 900	5. 06
Georgia	5, 656	4, 086	302	10, 044	3. 17
Idaho	94	283	3	380	. 71
Illinois	13, 758	21, 650	470	35, 878	4. 92
Indiana	2, 354	1, 953	127	4, 434	1. 41
Iowa	980	1, 771	7	2, 758	1. 14
Kansas	562	836	6	1, 404	. 77
Kentucky	16, 898	7, 654	308	24, 860	9. 80
Louisiana	3, 610	2, 706	325	6, 641	3. 43
Maine	201	484	15	700	. 88
Maryland	2, 630	2, 475	132	5, 237	3. 28
Massachusetts	1, 767	4, 498	----------	6, 265	1. 48
Michigan	15, 363	10, 124	111	25, 598	5. 70
Minnesota	4, 659	5, 357	54	10, 070	3. 75
Mississippi	14, 445	22, 230	87	36, 762	20. 53
Missouri	3, 712	2, 834	619	7, 165	2. 04
Montana	[3] 71	[3] 153	[3] 1	[3] 225	. 34
Nebraska	824	2, 088	43	2, 955	2. 12
Nevada	[1] 1	----------	----------	[1] 1	. 03
New Hampshire	217	198	2	417	. 92
New Jersey	5, 553	3, 478	63	9, 094	2. 43
New Mexico	[4] 67	[4] 178	[4] 8	[4] 253	. 86
New York	31, 882	10, 555	69	42, 506	3. 72
North Carolina	2, 724	1, 793	145	4, 662	1. 61
North Dakota	225	752	4	981	1. 53
Ohio [5]	6, 083	4, 550	436	11, 069	1. 65
Oklahoma	[6] 203	[6] 95	[6] 28	[6] 326	. 41
Oregon	514	1, 282	38	1, 834	2. 06
Pennsylvania	3, 060	2, 704	152	5, 916	. 61
Rhode Island	373	626	1	1, 000	1. 42
South Carolina	4, 195	5, 991	14	10, 200	5. 53
South Dakota	126	488	6	620	. 89
Tennessee	3, 858	2, 206	582	6, 646	2. 67
Texas	13, 910	8, 268	1, 763	23, 941	4. 44
Utah [2]	----------	----------	----------	----------	----------
Vermont	610	414	----------	1, 024	2. 91
Virginia	1, 430	670	36	2, 136	. 84
Washington	1, 221	2, 152	93	3, 466	2. 22
West Virginia	3, 220	2, 449	150	5, 819	3. 43
Wisconsin	913	2, 420	58	3, 391	1. 16
Wyoming	----------	[7] 2	----------	[7] 2	. 03

[1] For 6 months.
[2] Not reporting.
[3] For 11 months.
[4] For 9 months.
[5] From reports of clinics and correctional institutions.
[6] For 4 months; from clinic reports.
[7] For 3 months; from clinic reports.

TABLE 7.—*Annual rate per 1,000 inhabitants, of new admissions to clinics and of total treatments given in clinics, from July 1, 1926, to June 30, 1927*

State	New admissions	Treatments	State	New admissions	Treatments
Total	1.02	18.56	Montana	.04	1.07
			Nebraska	.64	22.53
Alabama	3.78	43.77	Nevada [2]	--------	--------
Arizona [1]	--------	--------	New Hampshire	.27	17.98
Arkansas	2.33	36.15	New Jersey	.68	16.64
California	1.38	25.80	New Mexico [1]	--------	--------
Colorado	.63	15.84	New York	.57	13.64
Connecticut	.52	12.24	North Carolina	.31	4.82
Delaware	1.34	16.24	North Dakota	.02	.31
District of Columbia [2]	--------	--------	Ohio	1.38	25.84
Florida	2.30	15.14	Oklahoma	.41	5.02
Georgia	.99	13.12	Oregon	.48	7.40
Idaho [1]	--------	--------	Pennsylvania	.57	12.43
Illinois	1.33	34.90	Rhode Island	.79	19.58
Indiana	1.11	27.84	South Carolina	1.02	14.21
Iowa [3]	--------	--------	South Dakota [1]	--------	--------
Kansas	.24	5.63	Tennessee	2.00	27.63
Kentucky	2.17	18.54	Texas	.50	7.95
Louisiana	.83	7.97	Utah [2]	--------	--------
Maine	.33	7.17	Vermont [3]	--------	--------
Maryland	1.62	38.81	Virginia	.77	6.67
Massachusetts	1.94	33.23	Washington	.73	15.03
Michigan	1.47	30.86	West Virginia	.98	12.66
Minnesota	.40	9.37	Wisconsin	.57	6.01
Mississippi	.17	1.21	Wyoming	.03	1.44
Missouri	.80	19.09			

[1] No clinics. [2] Not reporting. [3] Clinics not reporting.

TABLE 8.—*Report of cooperative clinics furnished through State health departments, from July 1, 1926, to June 30, 1927*

State and city	Total monthly reports received	New patients admitted				Patients discharged as probably cured	Treatments given	Doses of arsphenamine administered	Wassermann tests made	Microscopic examinations, gonococcus
		Total	Syphilis	Gonorrhea	Chancroid					
Total	4,494	107,688	61,445	43,219	3,024	44,701	1,964,233	509,894	309,071	179,183
Alabama	[1] 148	[1] 9,628	[1] 6,875	[1] 2,535	[1] 218	[1] 5,582	[1] 111,572	[1] 41,557	[1] 15,016	[1] 2,237
Albany	11	179	159	20	--------	199	2,709	1,574	705	80
Anniston	11	91	90	1	--------	46	2,387	1,144	258	1
Bessemer	6	91	73	18	--------	177	2,951	486	1	28
Birmingham (2)[2]	22	2,912	2,368	543	1	1,707	34,972	13,603	6,102	642
Gadsden	11	81	35	44	2	77	2,956	509	97	84
Huntsville	11	133	100	32	1	149	2,073	762	469	170
Mobile	11	1,330	1,003	308	19	596	15,027	5,115	1,094	68
Montgomery	11	469	310	109	50	1	5,934	1,477	257	--------
Riderwood	8	46	26	19	1	15	213	181	99	--------
Selma	11	126	109	11	6	33	1,561	670	278	--------
Talladega	11	137	71	63	3	61	1,516	691	371	41
Tuscaloosa	11	367	262	100	5	302	5,395	1,236	446	251
Cooperative	12	3,203	1,945	1,136	122	2,026	25,836	11,955	4,114	836
Arkansas	83	4,488	3,169	1,298	21	3,815	69,516	17,213	11,803	3,032
Fort Smith	11	117	112	5	--------	26	1,384	1,259	182	49
Hot Springs (2)	24	3,265	2,207	1,058	--------	3,630	60,777	12,509	6,509	2,054
Little Rock	12	834	673	160	1	4	5,759	2,170	4,050	613
North Little Rock	12	7	7	--------	--------	--------	123	97	12	10
Pine Bluff	12	118	118	--------	--------	19	936	812	533	40
Texarkana	12	147	52	75	20	136	537	366	517	266

[1] Includes June report for all free clinics; distribution by individual clinics not available.
[2] Numbers in parentheses indicate the number of clinics included in the tabulation for the city.

TABLE 8.—*Report of cooperative clinics furnished through State health departments, from July 1, 1926, to June 30, 1927*—Continued

State and city	Total monthly reports received	New patients admitted				Patients discharged as probably cured	Treatments given	Doses of arsphenamine administered	Wassermann tests made	Microscopic examinations, gonococcus
		Total	Syphilis	Gonorrhea	Chancroid					
California	150	6,106	3,666	2,399	41	1,070	114,385	46,935	24,741	5,919
El Monte	8	17	14	3	-------	3	322	291	296	9
Fresno	12	183	111	66	6	48	1,930	1,517	642	317
Los Angeles (3)	36	2,560	1,470	1,079	11	348	37,480	12,430	7,376	2,527
Oakland	12	810	444	366	-------	63	13,164	3,719	3,729	424
San Diego (2)	14	375	226	148	1	287	6,244	5,479	867	238
San Francisco (4)	44	1,518	1,040	455	23	204	45,277	20,973	10,532	1,981
San Jose	12	30	23	7	-------	-------	398	145	304	3
Stockton	12	613	338	275	-------	117	9,570	2,381	995	420
Colorado	60	674	236	422	16	530	17,014	2,426	1,236	1,755
Colorado Springs	12	35	18	17	-------	6	734	149	49	54
Denver (2)	24	456	167	288	1	409	10,492	1,585	910	1,400
Fort Collins	12	74	2	71	1	72	3,284	83	35	197
Pueblo	12	109	49	46	14	43	2,504	609	242	104
Connecticut	79	855	331	498	26	578	20,023	5,049	1,666	1,976
Bridgeport	12	72	38	34	-------	79	3,420	822	202	116
Hartford	12	364	107	252	5	129	7,113	2,210	334	832
New Haven	12	143	72	71	-------	87	6,700	1,140	545	131
New London	12	21	15	6	-------	34	675	103	78	33
Norwich	7	6	6	-------	-------	-------	89	88	13	3
Stamford	12	216	81	114	21	236	1,133	377	454	823
Waterbury	12	33	12	21	-------	13	893	309	40	38
Delaware	30	325	187	114	24	125	3,947	2,091	510	330
Dover	12	126	36	71	19	118	2,301	910	306	260
Wilmington (2)	18	199	151	43	5	7	1,646	1,181	204	70
Florida [3]	28	2,878	1,710	1,027	141	516	18,920	8,484	5,080	3,667
Jacksonville	6	605	511	77	17	261	2,689	2,574	386	5
Miami	11	852	396	332	124	8	8,301	4,871	1,008	265
Tampa	11	1,421	803	618	-------	247	7,930	1,039	3,686	3,397
Georgia	83	3,150	2,561	552	37	278	41,597	14,948	13,580	525
Atlanta (2)	23	952	868	84	-------	-------	10,300	4,407	7,693	24
Augusta	12	325	154	163	8	-------	17,228	1,901	2,295	429
Brunswick	12	74	74	-------	-------	37	604	316	253	20
Columbus	12	369	236	130	3	15	3,676	1,451	376	2
Macon	12	689	543	127	19	-------	5,037	2,609	1,163	34
Savannah	12	741	686	48	7	226	4,752	4,264	1,800	16
Illinois	233	9,679	4,369	5,022	288	4,210	254,642	47,496	33,250	32,264
Alton	12	175	91	78	6	181	4,604	649	272	352
Cairo	12	122	93	29	-------	144	1,909	1,338	306	-------
Calumet City	12	10	5	5	-------	13	3,104	546	17	1
Carlinville	6	58	25	28	5	37	385	113	113	256
Chicago (12)	118	8,118	3,584	4,290	244	3,154	221,984	36,240	30,908	28,903
Decatur	12	216	93	123	-------	-------	4,889	1,522	267	865
East St. Louis	12	301	129	150	22	188	5,685	459	244	644
Evanston	2	44	31	13	-------	15	50	28	38	18
Litchfield	12	43	9	32	2	10	2,130	166	67	198
Peoria	12	198	117	81	-------	159	3,191	1,081	418	351
Rockford	12	97	43	54	-------	61	1,774	550	124	133
Springfield	11	297	149	139	9	248	4,937	4,804	476	543
Indiana	200	3,501	1,851	1,526	124	1,114	87,705	26,550	7,247	2,960
Anderson	12	137	69	68	-------	71	4,497	353	236	135
Columbus	12	28	15	11	2	14	1,053	125	33	23
Elwood	12	46	27	19	-------	17	1,131	57	28	13
Evansville	12	762	372	358	32	176	17,293	5,086	1,214	283
Fort Wayne	12	210	88	115	7	96	2,348	627	313	436
Hammond	12	123	94	27	2	65	6,799	1,178	359	15

[3] For 11 months.

TABLE 8.—*Report of cooperative clinics furnished through State health departments, from July 1, 1926, to June 30, 1927*—Continued

State and city	Total monthly reports received	New patients admitted				Patients discharged as probably cured	Treatments given	Doses of arsphenamine administered	Wassermann tests made	Microscopic examinations, gonococcus
		Total	Syphilis	Gonorrhea	Chancroid					
Indiana—Continued.										
Indianapolis (2)	24	833	464	331	38	19	25, 320	7, 063	2, 161	698
Kokomo	12	96	50	46	--------	37	1, 860	1, 301	125	49
Madison	12	55	16	37	2	34	1, 099	143	27	13
Marion	12	32	22	10	--------	13	2, 138	1, 790	32	2
Michigan City	8	16	12	3	1	8	319	188	22	7
Muncie	12	346	164	148	34	349	4, 374	2, 724	558	363
New Castle	12	37	17	20	--------	3	1, 225	--------	59	--------
Richmond	12	53	43	10	--------	6	1, 470	212	142	48
South Bend	12	293	182	111	--------	65	8, 993	3, 597	1, 040	507
Terre Haute	12	434	216	212	6	141	7, 786	2, 106	898	368
Kansas	54	440	249	185	6	318	10, 283	3, 370	1, 601	1, 026
Junction City	10	--------	--------	--------	--------	--------	--------	--------	--------	42
Kansas City	9	72	44	26	2	72	1, 583	701	192	43
Topeka	12	148	65	79	4	60	3, 581	1, 160	681	437
Wichita (2)	23	220	140	80	--------	186	5, 119	1, 509	728	504
Kentucky	154	5, 498	2, 804	2, 545	149	3, 212	47, 058	14, 319	6, 706	1, 526
Ashland	12	168	130	38	--------	--------	2, 757	1, 546	248	279
Covington	12	162	69	89	4	159	2, 859	489	201	--------
Frankfort	12	1, 471	738	733	--------	1, 186	4, 748	1, 142	1, 488	--------
Fulton and Hickman	7	34	31	3	--------	1	377	352	27	1
Georgetown	12	74	44	24	6	91	1, 001	421	136	32
Henderson	7	36	35	1	--------	1	324	72	58	2
Hindman	4	--------	--------	--------	--------	--------	22	10	6	--------
Lexington	9	464	298	164	2	539	7, 816	1, 998	1, 619	502
Louisville	12	2, 423	994	1, 304	125	854	20, 123	5, 002	1, 378	--------
Maysville	10	69	38	31	--------	59	575	303	80	39
Newport	12	165	90	66	9	115	2, 685	678	334	371
Owensboro	10	49	44	4	1	61	594	461	152	23
Paducah	9	58	55	3	--------	2	602	315	89	11
Paintsville	5	33	22	11	--------	30	495	408	127	60
Pineville	4	6	6	--------	--------	3	153	33	37	--------
Winchester	5	18	18	--------	--------	--------	170	59	19	--------
Cooperative	12	268	192	74	2	111	1, 757	1, 030	707	206
Louisiana	24	1, 608	894	694	20	1, 482	15, 406	6, 651	4, 227	3, 573
New Orleans	12	449	225	219	5	16	7, 904	3, 296	801	521
Shreveport	12	1, 159	669	475	15	1, 466	7, 502	3, 355	3, 426	3, 052
Maine	47	263	151	101	11	235	5, 683	2, 426	697	411
Bath	12	10	1	9	--------	--------	606	54	104	232
Calais	12	26	12	14	--------	137	1, 241	578	106	17
Portland (2)	23	227	138	78	11	98	3, 836	1, 794	487	162
Maryland	157	2, 582	1, 142	1, 377	63	959	61, 972	15, 407	3, 755	3, 527
Annapolis	12	195	69	123	3	37	2, 060	676	138	26
Baltimore (4)	48	1, 645	785	803	57	486	38, 576	9, 731	2, 310	1, 543
Brunswick	10	76	20	56	--------	36	546	125	43	62
Cambridge	10	30	17	13	--------	6	216	84	35	--------
Crisfield	12	96	20	75	1	102	1, 062	343	89	264
Cumberland	12	239	71	167	1	126	15, 608	2, 085	451	953
Easton	10	35	25	10	--------	30	622	508	169	5
Ellicott City	12	18	18	--------	--------	3	563	395	129	--------
Hagerstown	12	163	80	83	--------	83	1, 933	1, 029	288	635
Hughesville	7	31	2	28	1	16	259	40	20	--------
Salisbury	12	54	35	19	--------	34	527	391	83	39
Massachusetts[4]	96	4, 122	1, 586	2, 536	--------	--------	70, 490	--------	--------	--------
Attleboro	6	13	6	7	--------	--------	202	--------	--------	--------
Boston (4)	24	3, 406	1, 199	2, 207	--------	--------	53, 911	--------	--------	--------
Brockton	6	31	24	7	--------	--------	968	--------	--------	--------
Fall River	6	21	16	5	--------	--------	1, 996	--------	--------	--------
Haverhill	6	32	10	22	--------	--------	992	--------	--------	--------
Holyoke	6	44	32	12	--------	--------	1, 014	--------	--------	--------

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[4] For 6 months.

TABLE 8.—*Report of cooperative clinics furnished through State health departments, from July 1, 1926, to June 30, 1927*—Continued

State and city	Total monthly reports received	New patients admitted				Patients discharged as probably cured	Treatments given	Doses of arsphenamine administered	Wassermann tests made	Microscopic examinations, gonococcus
		Total	Syphilis	Gonorrhea	Chancroid					
Massachusetts—Contd.										
Lawrence	6	29	17	12	-------	-------	992	-------	-------	-------
Lowell	6	89	25	64	-------	-------	1,927	-------	-------	-------
Lynn	6	58	22	36	-------	-------	1,118	-------	-------	-------
New Bedford	6	237	146	91	-------	-------	3,783	-------	-------	-------
Pittsfield	6	16	12	4	-------	-------	344	-------	-------	-------
Salem	6	50	27	23	-------	-------	976	-------	-------	-------
Springfield	6	96	50	46	-------	-------	2,267	-------	-------	-------
Michigan	164	6,609	3,430	3,137	42	1,290	138,583	21,572	33,551	30,013
Battle Creek	11	56	31	25	-------	36	482	172	173	177
Detroit (4)	48	5,632	2,917	2,714	1	1,001	120,274	18,861	29,324	27,888
Flint	12	278	125	120	33	11	4,535	326	986	652
Grand Rapids	12	99	41	57	1	28	1,706	469	239	90
Highland Park	10	24	15	9	-------	3	365	171	41	11
Jackson	12	59	43	16	-------	95	1,861	713	494	57
Kalamazoo	12	15	6	8	1	15	729	85	135	175
Lansing	12	139	106	33	-------	74	829	334	1,341	98
Pontiac (2)	23	257	107	144	6	2	6,309	65	553	682
Saginaw	12	50	39	11	-------	25	1,493	376	265	183
Minnesota	47	1,075	453	618	4	618	25,177	7,499	3,003	1,352
Duluth	12	396	136	260	-------	113	8,876	1,663	701	580
Minneapolis (2)	23	337	167	170	-------	111	9,264	3,311	1,358	239
St. Paul	12	342	150	188	4	394	7,037	2,525	944	533
Mississippi	12	306	242	61	3	107	2,171	1,273	199	125
Meridian	12	306	242	61	3	107	2,171	1,273	199	125
Missouri	159	2,814	2,036	755	23	504	66,995	9,576	6,446	2,680
Columbia	9	14	9	5	-------	2	357	182	64	44
Flat River	12	18	18	-------	-------	2	236	140	75	15
Hannibal	12	41	19	22	-------	2	209	94	42	16
Joplin	6	39	19	19	1	43	671	202	168	155
Kansas City (5)	43	1,108	666	427	15	212	17,235	4,440	3,922	1,609
Sedalia	9	96	55	37	4	124	1,111	397	209	142
Springfield	12	144	76	65	3	115	2,028	397	232	149
St. Joseph	11	276	115	161	-------	-------	3,420	838	285	191
St. Louis (4)	45	1,078	1,059	19	-------	4	41,628	2,886	1,449	359
Montana[3]	11	29	12	17	-------	21	700	66	33	76
Great Falls	11	29	12	17	-------	21	700	66	33	76
Nebraska	48	894	429	456	9	318	31,450	6,951	4,692	5,113
Hastings	12	24	5	19	-------	10	897	51	9	301
Lincoln	12	234	98	135	1	125	14,087	3,118	1,439	3,070
Omaha (2)	24	636	326	302	8	183	16,466	3,782	3,244	1,742
New Hampshire	47	122	65	57	-------	44	8,182	2,253	572	243
Concord	12	2	2	-------	-------	4	362	322	23	5
Dover	12	13	12	1	-------	3	322	121	12	1
Manchester	12	76	29	47	-------	35	6,087	1,204	187	212
Nashua	11	31	22	9	-------	2	1,411	606	350	25
New Jersey	235	2,534	1,502	1,026	6	937	62,390	15,341	8,392	2,754
Bayonne	12	11	10	1	-------	6	497	197	70	-------
Camden	12	58	56	2	-------	1	857	24	57	1
Elizabeth	2	45	24	21	-------	-------	577	208	81	49
Englewood	12	61	60	1	-------	4	497	497	264	38
Greystone Park	11	75	50	25	-------	119	1,789	1,709	296	63
Hackensack	5	42	42	-------	-------	11	260	152	56	-------
Jersey City	12	79	45	34	-------	27	3,868	1,132	444	167
Long Branch	12	79	76	3	-------	6	1,243	473	378	70
Montclair	12	46	45	1	-------	9	2,889	2,355	451	3
Morristown	12	24	16	8	-------	11	319	-------	47	-------

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[3] For 11 months.

TABLE 8.—*Report of cooperative clinics furnished through State health departments, from July 1, 1926, to June 30, 1927*—Continued

State and city	Total monthly reports received	New patients admitted				Patients discharged as probably cured	Treatments given	Doses of arsphenamine administered	Wassermann tests made	Microscopic examinations, gonococcus
		Total	Syphilis	Gonorrhea	Chancroid					
New Jersey—Contd.										
Mount Holly	6	12	11	1	-------	4	33	32	18	4
Newark	12	1, 037	419	616	2	564	26, 538	3, 478	2, 335	1, 640
New Brunswick	12	112	58	54	-------	33	910	566	141	47
Orange	12	220	169	50	1	7	5, 481	1, 627	2, 142	238
Passaic	11	35	32	3	-------	--------	1, 036	337	91	--------
Paterson (3)	19	93	60	32	1	26	4, 077	1, 171	525	79
Plainfield	12	90	65	24	1	30	1, 933	353	160	24
Salem	3	15	15	------	-------	--------	83	51	10	1
Somerville	12	13	13	------	-------	5	151	85	17	5
Spring Lake	11	17	17	------	-------	2	485	292	38	--------
Trenton	12	347	201	145	1	65	8, 249	507	726	315
Weehawken	11	23	18	5	-------	7	618	95	45	10
New York	556	6, 464	3, 913	2, 442	109	5, 403	155, 821	47, 288	14, 697	6, 687
Albany (4)	48	278	163	110	5	136	6, 502	1, 784	497	98
Amsterdam	12	65	45	20	-------	77	2, 338	893	81	6
Auburn	12	12	10	2	-------	1	865	186	100	30
Beacon	12	1	1	------	-------	22	203	148	86	--------
Binghamton	12	100	99	1	-------	65	6, 698	1, 794	402	21
Buffalo (2)	24	2, 384	1, 425	865	94	1, 878	40, 632	7, 383	3, 510	3, 311
Cohoes	12	30	8	20	2	31	496	112	21	--------
Corning	11	23	18	5	-------	19	561	464	29	5
Dunkirk	12	5	4	1	-------	4	167	103	6	--------
Elmira	12	102	55	47	-------	58	3, 679	1, 239	205	44
Glen Falls	12	56	33	23	-------	3	2, 350	953	155	63
Gloversville	12	25	15	10	-------	58	1, 006	767	56	22
Hornell	12	16	13	3	-------	50	401	100	52	13
Hudson	11	9	8	1	-------	5	53	45	17	15
Ithaca (2)	9	99	23	76	-------	73	1, 173	237	48	247
Jamestown	11	76	36	40	-------	72	3, 833	864	162	59
Little Falls	11	5	5	------	-------	43	142	23	6	--------
Middletown	1	9	8	1	-------	14	150	48	--------	--------
Newburgh	12	19	13	6	-------	3	458	58	12	1
New Rochelle	12	181	116	65	-------	231	2, 539	666	380	252
Niagara Falls	12	108	77	31	-------	274	2, 486	1, 482	287	84
Olean	12	36	16	20	-------	20	628	133	65	3
Oswego	11	27	19	7	1	23	2, 949	1, 649	82	16
Plattsburg	11	13	12	1	-------	36	406	210	54	5
Port Chester	11	31	27	4	-------	45	816	348	107	6
Poughkeepsie	12	53	34	19	-------	58	1, 192	535	109	98
Rochester (7)	76	799	615	183	1	558	31, 158	15, 868	4, 553	712
Rome	12	69	46	23	-------	37	2, 133	770	147	33
Salamanca	12	39	29	8	2	29	411	219	66	20
Saratoga Springs	11	36	23	12	1	27	542	224	24	2
Schenectady	12	117	52	63	2	72	2, 356	266	94	47
Syracuse (2)	23	912	440	471	1	692	15, 984	2, 465	1, 816	900
Troy	12	81	46	35	-------	30	1, 992	1, 027	227	123
Utica	12	393	215	178	-------	432	9, 862	1, 503	505	136
Watertown	12	33	26	7	-------	41	961	311	77	5
Wellsville	12	7	7	------	-------	1	338	322	10	--------
White Plains	11	27	25	2	-------	31	432	289	31	2
Yonkers	12	188	106	82	-------	154	6, 929	1, 800	618	308
North Carolina [5]	26	517	391	126	-------	152	8, 150	6, 570	3, 506	55
Charlotte	5	375	249	126	-------	23	1, 379	1, 191	274	55
Raleigh	7	98	98	------	-------	129	759	292	159	--------
Winston-Salem	4	44	44	------	-------	--------	396	205	138	--------
Cooperative	10	-------	-------	------	-------	--------	5, 616	4, 882	2, 935	--------
North Dakota	13	13	6	7	-------	15	199	30	38	166
Grand Forks	1	1	-------	1	-------	2	29	4	8	4
Minot	12	12	6	6	-------	13	170	26	30	162
Ohio	395	9, 250	4, 940	3, 885	425	2, 000	173, 418	36, 561	23, 614	14, 877
Akron	12	1, 000	337	595	68	146	23, 771	3, 425	1, 884	2, 277
Canton	12	67	56	11	-------	--------	561	271	176	31
Chillicothe	12	8	8	------	-------	13	96	96	9	--------
Cincinnati (4)	35	1, 095	736	336	23	302	20, 474	5, 122	2, 828	307

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[5] For 7 months.

TABLE 8.—*Report of cooperative clinics furnished through State health departments, from July 1, 1926, to June 30, 1927*—Continued

State and city	Total monthly reports received	New patients admitted				Patients discharged as probably cured	Treatments given	Doses of arsphenamine administered	Wassermann tests made	Microscopic examinations, gonococcus
		Total	Syphilis	Gonorrhea	Chancroid					
Ohio—Continued.										
Cleveland (10)	119	4,427	2,067	2,042	318	651	92,648	14,296	11,829	10,556
Columbus (4)	39	863	561	299	3	423	12,423	2,870	2,808	801
Dayton (2)	24	589	390	198	1	127	5,108	2,513	810	177
East Liverpool	12	98	32	65	1	37	2,052	523	162	287
Hamilton	12	66	66	------	------	57	435	419	237	40
Lakewood	11	4	3	------	1	2	16	16	12	9
Lima	12	24	17	7	------	------	1,636	345	31	10
Portsmouth	12	147	147	------	------	112	2,344	1,218	296	1
Port Clinton	12	4	2	2	------	1	13	7	82	1
Springfield (2)	24	166	111	55	------	80	2,064	1,078	350	211
Toledo (2)	23	478	219	249	10	17	5,076	2,212	885	139
Youngstown (2)	24	214	188	26	------	32	4,701	2,150	1,215	30
Oklahoma [6]	4	326	203	95	28	107	3,987	1,185	322	200
Oklahoma City	4	326	203	95	28	107	3,987	1,185	322	200
Oregon	12	428	260	168	------	------	6,588	1,582	850	746
Portland	12	428	260	168	------	------	6,588	1,582	850	746
Pennsylvania	501	5,561	2,974	2,438	149	3,747	120,982	26,881	11,374	5,400
Allentown	12	187	93	93	1	78	4,725	1,546	791	184
Altoona	12	128	97	31	------	137	3,524	1,183	142	127
Beaver Falls	11	105	69	32	4	50	1,021	407	68	101
Bedford	12	47	26	21	------	13	665	385	110	47
Bethlehem	12	113	101	11	1	15	2,037	1,209	308	112
Butler	10	44	25	18	1	27	371	140	97	43
Carlisle	12	17	15	2	------	------	547	------	41	17
Chambersburg	12	79	37	39	3	3	968	382	53	76
Clearfield	10	7	7	------	------	------	93	7	14	7
Coatesville	11	79	54	22	3	20	1,090	463	217	69
Connellsville	12	61	42	18	1	1	750	349	133	60
Du Bois	11	58	39	18	1	52	1,742	1,026	499	57
Easton	12	53	27	24	2	38	520	212	100	49
Erie	12	220	127	92	1	186	3,751	1,495	847	219
Greensburg	12	106	66	31	9	102	790	183	249	97
Hazleton	12	40	24	16	------	24	1,387	113	119	40
Huntingdon	12	39	16	23	------	------	492	189	63	38
Johnstown	12	254	139	104	11	197	2,387	1,065	363	243
Lancaster (2)	24	70	42	28	------	------	1,084	398	147	70
Lebanon	12	23	16	6	1	2	349	131	20	22
Lewistown	12	53	32	21	------	5	621	326	78	53
McKeesport	12	195	89	85	21	233	2,727	762	417	174
Meadville	11	24	24	------	------	------	157	77	38	24
Mifflintown	5	16	6	9	1	3	81	32	10	16
New Castle	12	50	35	15	------	107	469	295	65	50
Norristown	12	34	26	8	------	27	842	499	264	34
Philadelphia	12	422	267	151	4	396	7,793	2,395	931	418
Pittsburgh (2)	17	1,073	552	484	37	669	10,229	3,210	808	1,036
Pottsville	6	3	1	2	------	------	338	174	3	3
Reading	9	263	85	172	6	226	4,177	------	------	257
Rochester	10	29	25	4	------	------	252	148	30	29
Scranton (2)	24	555	213	318	24	423	44,412	1,809	1,194	531
Shamokin	12	36	22	14	------	26	1,554	438	167	36
Sharon	11	59	54	5	------	4	454	270	54	59
Stroudsburg	9	26	9	16	1	15	207	45	43	25
Sunbury	12	79	34	44	1	60	2,219	337	163	78
Tunkhannock	12	4	2	2	------	2	77	19	4	4
Washington	12	156	89	65	2	112	1,838	554	100	154
West Chester	11	37	22	15	------	------	372	85	433	37
Wilkes-Barre (2)	23	573	232	334	7	478	12,790	4,359	1,980	565
York	12	144	93	45	6	16	1,080	164	211	139
Rhode Island	83	558	306	252	------	139	13,783	5,432	6,297	3,733
Arctic	12	------	------	------	------	------	------	------	8	1
Newport	12	22	18	4	------	22	326	173	36	10
Pawtucket	12	50	34	16	------	38	2,820	609	257	102
Providence (3)	36	477	245	232	------	78	10,290	4,361	5,926	3,609
Woonsocket	11	9	9	------	------	1	347	289	70	11

[6] For 4 months.

TABLE 8.—*Report of cooperative clinics furnished through State health departments, from July 1, 1926, to June 30, 1927*—Continued

State and city	Total monthly reports received	New patients admitted				Patients discharged as probably cured	Treatments given	Doses of arsphenamine administered	Wassermann tests made	Microscopic examinations, gonococcus
		Total	Syphilis	Gonorrhea	Chancroid					
South Carolina [7]	4	313	125	177	11	113	4, 369	1, 094	210	934
Orangeburg	2	79	32	46	1	13	430	295	92	------
Spartanburg	2	234	93	131	10	100	3, 939	799	118	934
Tennessee	130	4, 968	2, 976	1, 472	520	2, 264	68, 658	22, 503	23, 619	4, 328
Chattanooga	12	93	61	29	3	50	744	441	103	41
Dyersburg	10	40	28	12	------	7	309	206	52	9
Franklin	12	22	20	2	------	20	153	151	73	13
Knoxville	12	899	497	353	49	288	17, 152	4, 526	1, 274	1, 254
Maryville	12	21	21	------	------	2	237	132	113	7
Memphis	12	2, 174	1, 556	489	129	846	27, 382	11, 130	20, 561	1, 567
Murfreesboro	12	24	23	1	------	12	303	270	88	4
Nashville (2)	24	1, 624	721	566	337	1, 012	21, 514	5, 287	1, 220	1, 397
Trenton	12	48	38	10	------	12	686	274	88	9
Union City	12	23	11	10	2	15	178	86	47	27
Texas	32	2, 681	1, 663	647	371	1, 024	42, 881	12, 675	6, 842	11, 601
Dallas	12	22	22	------	------	33	396	335	1, 113	16
Houston	9	1, 963	1, 205	425	333	922	21, 417	5, 608	3, 876	2, 483
San Antonio	11	696	436	222	38	69	21, 068	6, 732	1, 853	9, 102
Virginia	87	1, 968	1, 406	529	33	357	16, 977	10, 223	7, 715	2, 211
Charlottesville	6	149	149	------	------	------	1, 125	1, 125	2, 964	------
Danville	12	93	85	8	------	16	924	489	284	14
Lynchburg	12	215	80	109	26	217	538	538	277	409
Newport News	11	51	50	1	------	30	1, 224	1, 145	190	35
Norton	12	67	56	11	------	72	1, 872	718	321	8
Petersburg	12	293	207	81	5	15	3, 082	2, 080	648	147
Richmond	12	987	679	306	2	6	7, 548	3, 691	2, 840	1, 598
Roanoke	10	113	100	13	------	1	664	437	191	------
Washington	36	1, 134	568	564	2	731	23, 473	3, 785	9, 279	11, 651
Seattle	12	729	360	367	2	419	12, 275	1, 949	5, 796	7, 853
Spokane	12	257	129	128	------	271	8, 964	1, 096	1, 213	1, 973
Tacoma	12	148	79	69	------	41	2, 234	740	2, 270	1, 825
West Virginia	107	1, 654	905	677	72	388	21, 473	7, 555	3, 366	2, 732
Alderson	9	8	8	------	------	9	137	72	33	11
Charleston	12	500	249	251	------	70	9, 180	1, 202	1, 054	970
Clarksburg	12	101	67	34	------	33	1, 806	806	223	220
Glenville	1	2	2	------	------	------	2	2	1	------
Huntington	12	172	145	27	------	3	3, 158	2, 221	705	144
Kingwood	3	------	------	------	------	2	16	8	1	------
Logan	12	258	138	94	26	133	1, 628	742	497	------
Moundsville	12	100	24	76	------	8	699	200	137	197
Parkersburg	9	297	132	121	44	116	1, 078	745	189	94
Richwood	12	26	26	------	------	13	259	259	------	------
Spencer	1	12	9	3	------	------	5	5	4	1
Wheeling	12	178	105	71	2	1	3, 505	1, 293	522	1, 095
Wisconsin	156	1, 671	859	780	32	398	17, 526	7, 075	9, 329	6, 767
Beloit	12	38	24	14	------	34	787	305	------	------
Green Bay	12	10	5	5	------	2	59	15	23	10
Janesville	12	23	4	19	------	15	562	34	87	148
Kenosha	12	31	12	19	------	10	307	212	148	60
La Crosse	12	46	7	39	------	21	1, 290	160	197	456
Madison	12	116	31	85	------	16	1, 980	562	241	326
Milwaukee (3)	36	1, 239	712	495	32	200	9, 453	4, 836	8, 065	5, 251
Oshkosh	12	25	17	8	------	11	586	368	103	62
Racine	12	75	27	48	------	31	808	306	133	97
Superior	12	32	13	19	------	11	1, 168	208	253	185
Wausau	12	36	7	29	------	47	526	69	79	172
Wyoming [8]	3	2	------	2	------	------	87	2	10	11
Casper	3	2	------	2	------	------	87	2	10	11

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[7] For 2 months.

[8] For 3 months.

NOTE.—States having no clinics and those whose clinics do not report have been omitted from the above table; they are Arizona, District of Columbia, Idaho, Iowa, Nevada, New Mexico, South Dakota, Utah, and Vermont.

TABLE 9.—*Report of 39 correctional institutions*

Patients admitted:	
Syphilis	3, 614
Gonorrhea	4, 145
Chancroid	101
Total	7, 860
Patients discharged as probably cured	5, 543
Treatments given	305, 580
Doses of arsphenamines administered	32, 904
Wassermann tests made	45, 494
Microscopic examinations for gonococcus	21, 367

TABLE 10.—*Statistical summary of activities in the control of venereal diseases for the fiscal years 1926 and 1927*

	1927	1926
MEDICAL ACTIVITIES		
A. Cases of venereal diseases reported to State health departments:		
I. Syphilis	196, 219	[1] 205, 595
II. Gonorrhea	160, 555	[1] 164, 808
III. Chancroid	6, 964	[1] 6, 812
Total	363, 738	[1] 377, 215
B. Doses of arsphenamines distributed by State health departments	783, 377	651, 785
C. Clinics:		
I. Clinics established during the year	21	23
II. Clinics reporting to State health departments	425	416
III. Report from clinics—		
a. New patients admitted	107, 688	100, 776
b. Patients discharged as probably cured	44, 701	44, 329
c. Treatments given	1, 964, 233	1, 881, 380
d. Doses of arsphenamines administered	509, 894	482, 403
e. Wassermann tests made	309, 071	291, 803
f. Microscopic examinations for gonococcus infection	179, 183	188, 674
D. Requests for medical information received by the Public Health Service	471	640
EDUCATIONAL ACTIVITIES		
A. Pamphlets:		
I. Requests for pamphlets received by the Public Health Service	23, 402	12, 235
II. Pamphlets distributed—		
a. By the Public Health Service to—		
1. State health departments	15, 241	4, 711
2. Others	191, 680	[2] 61, 996
Total	206, 921	[2] 66, 707
b. By State health departments	927, 472	969, 592
c. Gross total pamphlets distributed	1, 134, 393	[2] 1, 036, 299
Minus pamphlets distributed by the Public Health Service to State health departments	15, 241	4, 711
d. Net total pamphlets distributed	1, 119, 152	1, 031, 588
III. Venereal disease pamphlets issued by the Public Health Service	4	2
B. Lectures, films, exhibits, and slide showings:		
I. Lectures, films, exhibits, and slide showings reported by the—		
a. Public Health Service	334	134
b. State health departments	4, 776	5, 315
Total	5, 110	5, 449
II. Average attendance reported by the—		
a. Public Health Service	135	137
b. State health departments	115	137
Total	116	137
III. Motion-picture films, strip films, exhibits, and lantern-slide sets loaned by the Public Health Service to—		
a. State health departments	107	421
b. Public Health Service field officers	58	2
c. Others	402	62
Total	567	485
C. Publicity material, Public Health Service:		
I. Articles furnished newspapers and magazines	5	25

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[1] Changed from previously published 1926 figures because of additional data received and an adjustment of data from the Tennessee State Health Department, which had erroneously included other than new cases.

[2] Correction of previously published 1926 figures.

DIVISION OF PERSONNEL AND ACCOUNTS

In charge of Asst. Surg. Gen. J. W. Kerr

The operations relating to personnel, finances, and property records were conducted as in previous years through the division of personnel and accounts. These activities are now satisfactorily organized; their volume has been determined by governmental policy; and, wherever practicable, economies have been effected. Specific needs in respect to personnel have been set forth on pages 22 and 26 of this report. Detailed information regarding medical directors of districts, the classes of personnel, the state of the finances, and the extent of property recording are presented below.

Public Health Districts

On March 7, 1927, a conference was held at the bureau with the directors of the six public-health districts. It was the first time since the districts were established, in 1922, that all of the directors had been brought together, and afforded a valuable opportunity for the discussion of the various problems that have arisen in connection with the coordination and standardization of field work and procedure. While the work of the service varies somewhat in different sections of the country, due to local conditions, the administration of quarantine stations, relief work, and the medical inspection of aliens is, of course, based upon the same laws and regulations. An opportunity to discuss the application of these general requirements to the conditions oftentimes peculiar to a given locality proved valuable, and the interchange of experiences and observations made during the past five years will be of material assistance to district directors in their future work.

From the beginning of the fiscal year until September 17, 1925, Senior Surg. E. K. Sprague continued as acting director of district No. 1. On the latter date, Senior Surg. C. H. Lavinder assumed the duties of director, under bureau orders, and has continued on this duty throughout the remainder of the year.

Plans for a more thorough inspection system to be established in the first district have been made, and standard inspection report forms devised for the various classes of stations in the district.

The headquarters of the first district, which are located in New York City, include also the office of the district sanitary engineer and the disbursing officer for the New York area. The director's office also houses the coordinator for supply, and a field office maintained in connection with studies of industrial hygiene. It should be stated that the immediate vicinity of New York embraces four large stations of the service—Marine Hospitals No. 21, Stapleton, Staten

Island, No. 43, on Ellis Island, and No. 70, Hudson Street, New York, and the New York Quarantine, at Rosebank, Staten Island. Through the coordination of purchases of supplies for these stations in the district director's office, material savings have been effected. Other Government establishments in the area have also purchased at rates secured under large contracts.

The director reports numerous conferences relating to immigration matters, public-health subjects, and miscellaneous administrative problems, and the delivery of four addresses at meetings of medical and public-health organizations. He has also served on four boards during the year, one of which was convened to consider revision of the regulations governing the medical inspection of immigrants.

Surg. B. S. Warren has served as director of the second district throughout the fiscal year. All stations of the service within the district have been inspected and reports of inspection were made to the bureau. Two stations where officers and men of the Coast Guard are furnished medical relief under contract were also visited. On request of the Commissioner of Indian Affairs, the reservation at Cherokee, N. C., was inspected and a report made thereon.

Conferences were held with officers of the Baltimore Chamber of Commerce relative to the matter of expediting through quarantine export coal ships, and satisfactory results were obtained.

The director reports that, as a result of repeated inspections and investigations of service activities within the district for a period of several years, and recommendations which have resulted in numerous economies, it is his belief that the limit has been reached in the matter of reducing expenditures, at least for the time being. In fact, at certain stations, and particularly at marine hospitals, the need of increased facilities adequately to care for steadily increasing activities is becoming apparent.

The proximity to Washington of the headquarters of the second district (Baltimore, Md.) enables the director to maintain close contact with the bureau as well as with field stations in matters relating to field activities. He reports that the morale at smaller stations, where the medical officers are in numerous instances part-time employees, has greatly improved as a result of this contact with the bureau.

From the beginning of the fiscal year until September 30, 1926, Senior Surg. C. C. Pierce acted as director of district No. 3, being relieved from duty on that date and assigned to the bureau as Assistant Surgeon General in charge of the Division of Sanitary Reports and Statistics. Effective November 1, 1926, Surg. M. H. Foster assumed the duties of district director, in addition to his duties as medical officer in charge of Marine Hospital No. 5, at Chicago.

Due to the evacuation of the Chicago Marine Hospital for the purpose of making extensive repairs under appropriations granted by Congress, and the necessity for making arrangements for the outside care of patients, Doctor Foster was compelled to divide his time between the duties of director and work at the hospital, as occasion required. All hospital stations in the district were inspected during the year, however, as well as a number of relief stations.

The director has attended meetings of the Federal Business Association, and meetings of the Council on Medical Education of the American Medical Association. He has also represented the service at meetings of the Hospital Association of Illinois, held in Chicago, and the Hospital Clinical Congress, held at Milwaukee, Wis.

Senior Surg. John McMullen continued to serve as director of the fourth district throughout the fiscal year. The majority of the stations within this district were visited during the year. Unserviceable property was inspected and disposed of wherever necessary.

The director served on a board for consideration of the consolidation of the immigration and quarantine work at the port of New Orleans. The report of the board indicated that it would be advantageous to combine these two activities, and as a result the immigration work is now done under the direction of the medical officer in charge of the United States Quarantine Station, New Orleans, La.

Conferences were held with all of the State health officers in the fourth district with only one exception. The relations of the director with the various State health officers have been very cordial. On special request of the State health officer of Texas, the director of the district visited that State on several occasions and accompanied the State health officer to various towns in Texas in connection with the investigation of outbreaks of disease.

At the instance of the local health authorities at Hattiesburg, Miss., special investigation was made with reference to the diagnosis of cases of trachoma in that vicinity.

Under date of April 24, 1927, the director was ordered to Memphis, Tenn., for cooperation with the Red Cross in the flood disaster relief and to act as liaison officer between the Red Cross and the State health officers in the flooded area. He was also directed to assume general charge of all activities of the Public Health Service in connection with the prevention of the spread of epidemic diseases in the flooded area. This includes the States of Louisiana, Mississippi, Arkansas, Tennessee, Kentucky, and Missouri. On May 25, 1927, the headquarters of the flood relief work were transferred from Memphis, Tenn., to New Orleans, La. Nineteen medical officers and four sanitary engineers were assigned to this duty. Throughout the remainder of the fiscal year practically all of the time of the director of this district was consumed in supervising the work of the Public Health Service in the flooded areas.

Senior Surg. J. C. Perry continued as director of the fifth district throughout the year. In addition to his Public Health Service duties he was requested, under the cooperative arrangement with the Bureau of Indian Affairs, to inspect Indian reservations and schools in the district, and visited 10 of these places located within that territory. Reports covering the medical service furnished, with recommendations as to further needs, were in each instance made to the Commissioner of Indian Affairs.

All Public Health Service stations within the district were visited and inspected, the larger stations at six-months intervals. Four institutions where service beneficiaries are under treatment for mental diseases were also visited, to determine whether these beneficiaries are receiving proper care. The director has also served as a member of several examination boards.

Special attention has been given to the coordination of activities within the district, and conferences were held with officers in charge of stations relative to possible improvements in the work. The question of the examination of aliens at San Pedro for ports north, and at San Francisco of those destined to San Pedro, has been adjusted, and the inspection of aliens on the Mexican border materially improved.

Close cooperation has been maintained with State and local health authorities, and with horticultural commissioners relative to ground-squirrel control measures. The director also served as a member on Public Health and Sanitation of the Regional Planning Commission, in cooperation with the California State health officer and the city health officer of San Francisco; a member of the public health section of the Commonwealth Club, and a member of the real estate committee of the San Francsico Federal Business Association.

The examination of personnel starting for the Alaska salmon canneries having proved so successful during the preceding year, this duty was again undertaken during the months of April and May. A total of 3,905 persons were examined, and 3,614 vaccinated Eighteen rejections were made on account of communicable disease or general physical condition.

In addition to other duties, the director of the fifth district has had general charge of plague-control measures in California.

In the sixth district, Senior Surg. G. M. Magruder served as district director from the beginning of the fiscal year until March 27, 1927, on which date he was relieved from duty. On March 28, the duties of district director were assumed by Surg. L. D. Fricks.

During the year all first, second, and third class relief stations and all quarantine stations in the district were inspected and various administrative problems discussed with the medical officers in charge. These visits were also made the occasion for inspection of any unserviceable property reported, and condemnation where warranted.

Early in the fiscal year the director visited 11 Indian reservations and schools in the district, and transmitted reports, together with recommendations, to the Commissioner of Indian Affairs.

Since undertaking the duties of district director, Surgeon Fricks has given much of his time to the adjustment of administrative matters at Relief Station No. 329, Seattle, Wash. The director of the sixth district acts as medical officer in charge of this station, as well as of quarantine and immigration activities, in addition to his duties as district director.

Commissioned Medical Officers

On July 1, 1926, the regular corps consisted of the Surgeon General, 3 assistant surgeons general at large, 22 senior surgeons, 135 surgeons, 19 passed assistant surgeons, and 33 assistant surgeons. Of this number, aggregating 213, 2 assistant surgeons general at large, 10 senior surgeons, 3 surgeons, and 3 passed assistant surgeons were on waiting orders. During the fiscal year the following changes occurred in the several grades: One surgeon was promoted to the grade of senior surgeon to fill a vacancy created by the placing on permanent waiting orders of 1 senior surgeon; 2 passed assistant surgeons were promoted to the grade of surgeon; 5 assistant surgeons were promoted to the grade of passed assistant surgeon; 25 candidates for appointment to the grade of assistant surgeon were successful in the entrance examination prescribed by law and the regulations of the service and were commissioned in that grade; 1 surgeon was placed on waiting orders because of physical disability; 4 assistant surgeons resigned from the service; 1 senior surgeon and 1 passed assistant surgeon on waiting orders and 1 senior surgeon and 1 surgeon on active duty died.

On June 30, 1927, after these changes had occurred, the regular corps consisted of the Surgeon General, 3 assistant surgeons general at large, 21 senior surgeons, 135 surgeons, 21 passed assistant surgeons, and 47 assistant surgeons. Of these 228 officers, 2 assistant surgeons general at large, 10 senior surgeons, 4 surgeons, and 2 passed assistant surgeons were on that date on waiting orders.

At the close of the fiscal year 1927, 1 senior surgeon and 6 surgeons were serving by detail as assistant surgeons general in charge of divisions of the bureau in accordance with the acts approved July 1, 1902, and July 9, 1918. Three senior surgeons and 3 surgeons were on duty as directors of the public health districts. One senior surgeon relieved a surgeon as assistant surgeon general in charge of a division of the bureau. One surgeon was on detail as chief surgeon, Bureau of Mines, Department of Commerce, and 1 surgeon, 1 passed assistant surgeon, and 1 assistant surgeon were serving (the surgeon as medical director) on detail to the United States Employees' Compensation Commission. One surgeon was assigned as assistant to the Director, Pan American Sanitary Bureau, Washington, D. C. Three surgeons were serving on detail to the Secretary of the Interior in connection with the control of communicable diseases among Indians.

Reserve Officers

On July 1, 1926, the reserve commissioned officers on active duty numbered 64, this number being composed of 1 assistant surgeon general, 4 surgeons, 4 dental surgeons, 11 passed assistant surgeons, 12 passed assistant dental surgeons, 26 assistant surgeons, and 6 assistant dental surgeons.

On July 1, 1927, the number of reserve officers on active duty was 72, consisting of 1 assistant surgeon general, 1 senior dental surgeon, 6 surgeons, 3 dental surgeons, 9 passed assistant surgeons, 16 passed assistant dental surgeons, 31 assistant surgeons, and 5 assistant dental surgeons. There were on inactive status at the close of the fiscal year 6 assistant surgeons general, 42 senior surgeons, 78 surgeons, 2 dental surgeons, 33 passed assistant surgeons, 29 assistant surgeons, and 1 assistant dental surgeon, the total number being 191.

Attending Specialists

On July 1, 1926, there were 167 attending specialists in the service, and during the year this number increased to 171, of which number 146 were consultants to marine hospitals, while 25 were available for call at second and third class relief stations.

Acting Assistant Surgeons

On July 1, 1926, there were 483 acting assistant surgeons in the Public Health Service, and by July 1, 1927, this number increased to 496.

Of the 496 acting assistant surgeons on duty July 1, 1927, 101 were on duty at marine hospitals, 301 were engaged in immigration, relief, and maritime, border, insular, and foreign quarantine work, while 4 were engaged in the prevention of trachoma; 16 were on duty in connection with field investigations of public health and rural sanitation; 1 was engaged in national-park sanitation; 17 were on detail with the United States Coast Guard; 5 were serving with the Bureau of Mines by Detail; and 51 were engaged in antivenereal-disease activities as part-time employees at nominal compensation. Twenty of the fifty-one acting assistant surgeons engaged in antivenereal-disease activities held appointments as collaborating epidemiologists.

Internes

On July 1, 1926, there were 16 internes in the service, 2 of whom were students, and on July 1, 1927, there were 18. Internes are appointed locally under paragraphs 91 and 92 of service regulations for temporary periods of one year for duty at marine hospitals.

Contract Dental Surgeons

On July 1, 1926, there were 31 contract dental surgeons employed at marine hospitals, and second and third class relief stations. These part-time employees are appointed for local duty to receive fixed and uniform fees for dental work performed for service beneficiaries.

At the close of the fiscal year, 9 contract dental surgeons were at marine hospitals and 25 were at second and third class relief stations.

Epidemiologists

The number of collaborating epidemiologists was increased and the number of assistant collaborating epidemiologists was decreased slightly during the fiscal year. These employees are health officers or employees of State or local boards of health, who receive only nominal compensation from the Federal Government and who furnish the service with reports of communicable diseases received by State or local health organizations. During the year the number of collaborating epidemiologists increased from 42 to 43, these appointees being on duty in the different States, and the number of assistant collaborating epidemiologists was decreased from 4,419 to 4,395. Twenty of the collaborating epidemiologists also hold appointments as acting assistant surgeons under the division of venereal diseases.

Hygienic Laboratory

At the close of the fiscal year the personnel of the Hygienic Laboratory included, in addition to the director and assistant director, 3 chiefs of divisions, 8 surgeons, 3 passed assistant surgeons, 2 assistant surgeons, 1 pharmacist, 7 special experts, 1 consultant pathologist, 1 consultant dermatologist, 1 senior chemist, 3 chemists, 4 assistant chemists, 1 biochemist, 1 pathologist, 2 associate bacteriologists, 1 assistant bacteriologist, 1 senior pharmacologist, 2 assistant pharmacologists, 1 bacteriological technician, 1 artist, 15 other technical employees, 9 administrative and clerical employees, and 44 laboratory attendants and others.

Pharmacists and Administrative Assistants

At the close of the fiscal year there were on duty in the service 35 pharmacists and 16 administrative assistants. The number of employees in this class of personnel remains practically the same. The resignation of two pharmacists and the retirement of one necessitated the appointment of three junior pharmacists. The resignation of one administrative assistant was responsible for the slight decrease.

At the end of the fiscal year the pharmacists and administrative assistants were classed as follows:

Chief pharmacists	32
Junior pharmacists	3
Administrative assistants, first class	5
Administrative assistants, second class	11

Boards

During the fiscal year 1927, 173 boards were convened for various purposes throughout the service as follows: 16 for the medical examination of detained aliens; 4 for the examination of commissioned officers to determine their fitness for promotion; 19 for the examination of applicants for commission in the grade of assistant surgeon in the regular corps; 4 for the examination of scientific personnel for promotion; 1 to make physical examination of an officer in the Coast and Geodetic Survey; 2 for inspecting service property; 3 to make physical examination of certain officers of the Public Health Service; 1 to make physical examination of an officer for "waiting orders"; 3 to consider and make recommendations in connection with the revision of the immigration regulations; 1 to examine candidates for appointment in the Reserve Corps; 119 for the purpose of making physical examinations in connection with the appointment, promotion, and retirement of commissioned officers, warrant officers, and cadets in the United States Coast Guard.

The board established May 24, 1923, for the purpose of advising with the chairman of the Employees' Compensation Commission and assisting in the establishment of standards with respect to claims for compensation resulting from injuries and occupational diseases, has continued to serve throughout the year. Seventeen cases referred by the chairman of the commission have been considered and reported upon by the board.

There is printed in connection with this report a statement showing the total personnel of the service, by designations and activities, on duty July 1, 1927. In the total personnel, numbering 8,817, collaborating epidemiologists and assistant collaborating epidemiologists are included. There are 4,418 of these employees, which number, deducted from the total of 8,817, leaves 4,399 as the total of officers and employees actually on duty in the service.

Property Records

Through the property record section all accounts for property have been maintained, and property returns for 271 stations of the service have been audited during the year. In the course of the fiscal year sales of unserviceable property, livestock, hides, old metals, and garbage aggregated $5,588.91. Surplus property not desired by other departments of the Government was also sold to the State of Michigan for $10,238.46. Property surplus to the Public Health Service, valued at $70,953.06, was transferred to other Government departments. Surplus property aggregating in value $62,061.57 was loaned to the American Red Cross for flood relief work in the Mississippi Valley. The surplus property involved in all of these transactions was from Army supplies released following the World War.

Accounts Section

The bookkeeping and administrative audit of accounts was conducted, as in previous years, through the accounts section. This section consists of a bookkeeping unit, a transportation audit unit, a voucher audit unit, and a pay-roll audit unit. Cost accounting for hospitals and relief stations and all records of allotments and encumbrances are handled by the bookkeeping unit.

A tabulated statement of appropriations, expenditures, and balances for the fiscal year 1927 appears as an appendix to this report.

Personnel of the Public Health Service

[Figures as of July 1, 1927]

	Medical and scientific																	
	Regular corps							Reserve corps										
	Surgeon General	Assistant surgeon general at large	Assistant surgeon general	Senior surgeon	Surgeon	Passed assistant surgeon	Assistant surgeon	Assistant surgeon general	Senior surgeon	Surgeon	Passed assistant surgeon	Assistant surgeon	Acting assistant surgeon	Attending specialist and consultant	Contract dental surgeon	Interne	Scientific personnel	Pharmacist
BUREAU																		
Surgeon General's office	1																	
Divisions			7		2				1									1
Detailed to other offices					6	1	1						5					
FIELD																		
Coast Guard					2		1				5	1	17					
Perry Point, Md																		1
Public-health districts				3	3			1										
Waiting orders		2		10	4	2												
Hospital division:																		
Marine Hospital No. 1, Baltimore, Md					1		2					3	7	14				1
Marine Hospital No. 2, Boston, Mass				1			1				1	1	3	10		2		1
Marine Hospital No. 3, Buffalo, N. Y					1		1				1		3	7		2		
Marine Hospital No. 5, Chicago, Ill					1						1	2	8	6				1
Marine Hospital No. 6, Cleveland, Ohio					1					1	1		4	6				1
Marine Hospital No. 7, Detroit, Mich					2						1		4	9				1
Marine Hospital No. 8, Evansville, Ind					1								1	3	1			1
Marine Hospital No. 9, Fort Stanton, N. Mex					1	1	1			1			4					
Marine Hospital No. 10, Key West, Fla				1	1									1	1			1
Marine Hospital No. 11, Louisville, Ky					1								2	8	2			1
Marine Hospital No. 12, Memphis, Tenn					1								2	5	1	1		1
Marine Hospital No. 13, Mobile, Ala					1		1						5	5	1			1
Marine Hospital No. 14, New Orleans, La					2		1				1	11	4	6		7		2
Marine Hospital No. 15, Pittsburgh, Pa				1									4	6		1		2
Marine Hospital No. 16, Portland, Me					1					1			1	10	1			
Marine Hospital No. 17, Port Townsend, Wash					1					1			3					

Personnel of the Public Health Service—Continued

	Medical and scientific																	
	Regular corps							Reserve corps										
	Surgeon General	Assistant surgeon general at large	Assistant surgeon general	Senior surgeon	Surgeon	Passed assistant surgeon	Assistant surgeon	Assistant surgeon general	Senior surgeon	Surgeon	Passed assistant surgeon	Assistant surgeon	Acting assistant surgeon	Attending specialist and consultant	Contract dental surgeon	Interne	Scientific personnel	Pharmacist
FIELD—continued																		
Hospital division—Continued.																		
Marine Hospital No. 18, St. Louis, Mo					1								4	14	1			
Marine Hospital No. 19, San Francisco, Calif					3		1			1	4	6	5	6				3
Marine Hospital No. 20, Savannah, Ga					1						2		5	6				
Marine Hospital No. 21, Stapleton, N. Y					4		1			1	1	8	7					2
Marine Hospital No. 22, Vineyard Haven, Mass							1						1	1	1			
Marine Hospital No. 43, Ellis Island, N. Y					1		5						4	2		5		
Marine Hospital No. 66, Carville, La													5	4				
Marine Hospital No. 70, Hudson Street, N. Y					2		1			1	5		12	13				1
Marine Hospital No. 82, Norfolk, Va					1		1			2	1	4	3	4				2
Total hospitals																		
Relief stations:																		
Second class				1	5		1				1		21	20	10			1
Third class													88	3	15			
Miscellaneous														2				
Total relief stations																		
Foreign quarantine division:																		
Baltimore, Md					1								1					1
Boston, Mass					1		1						4					1
Ellis Island, N. Y. (immigration)				1	4	1	2						14					
El Paso, Tex					1								1					
Galveston, Tex					1								1					
Fort Monroe, Va					1								1					
Laredo, Tex													2					
Marcus Hook, Pa					1								2					

New Orleans, La					1		1						5					
Rosebank, N. Y					3		1						9					2
San Francisco, Calif. (immigration and quarantine)					2		2						2					
San Juan, P. R					1								2					
Foreign ports				1	21	9	1						67					2
All others					12	3	3						81					
Total																		
Domestic quarantine division:																		
Flood-control measures					1		10						1					
Interstate					1								1				4	
Trachoma					1								4					
Rural sanitation					3		1						4					
All others		1			1												8	
Total																		
Scientific research division:																		
Hygienic Laboratory					8	3	2							2				1
Leprosy investigation					1	1								3				
Malaria					1								1				2	
Nutrition studies					2									1				
Stream polution					1									7			5	1
Sewage disposal														4				
Industrial hygiene and sanitation					1		2						4	19			1	1
Child hygiene					1								3	4			1	
Morbidity statistics														2			1	
All others					5		1						3	3			2	
Total																		
Venereal diseases division													51	8				
Miscellaneous				1	1													1
Total	1	3	7	20	129	21	47	1	1	9	25	36	496	224	34	18	24	35

Personnel of the Public Health Service—Continued

	General and technical													Totals			
	Assistant collaborating epidemiologist and collaborating epidemiologist	Scientific—hygienic laboratory	Administrative assistant	Druggist	Nurse	Aid	Dietitian	Laboratorian in Roentgenology	Laboratorian in bacteriology	Pilot	Marine engineer	Clerk	All other employees	Medical and scientific	General and technical	Sub	Grand
BUREAU																	
Surgeon General's office												3	3	1	6	7	
Chief clerk's office												30	24		54	54	
Divisions					2							124	4	11	130	141	
Detailed to other offices														13		13	
Total														25	190		215
FIELD																	
Coast Guard														26			26
Perry Point, Md												4	8	1	12		13
Public-health districts			1									4		7	5		12
Waiting orders														18			18
Hospital division:																	
Marine Hospital No. 1, Baltimore, Md			1		17	2	2	1	1			5	58	28	87	115	
Marine Hospital No. 2, Boston, Mass			1		13	1		1	1			4	55	20	76	96	
Marine Hospital No. 3, Buffalo, N. Y			1		10	1	1					3	19	15	35	50	
Marine Hospital No. 5, Chicago, Ill				1	7	2		1	1			5	19	19	36	55	
Marine Hospital No. 6, Cleveland, Ohio					10	1	1		1			7	27	14	47	61	
Marine Hospital No. 7, Detroit, Mich					10	2						3	25	17	40	57	
Marine Hospital No. 8, Evansville, Ind					5							2	13	7	20	27	
Marine Hospital No. 9, Fort Stanton, N. Mex			1	1	8	2	2	1				9	105	8	129	137	
Marine Hospital No. 10, Key West, Fla					4							1	11	5	16	21	
Marine Hospital No. 11, Louisville, Ky					6							4	17	14	27	41	
Marine Hospital No. 12, Memphis, Tenn					6			1				2	20	11	29	40	
Marine Hospital No. 13, Mobile, Ala					9	1		1	1			3	30	14	45	59	
Marine Hospital No. 14, New Orleans, La			1	1	33	3	3	1	1			15	106	34	164	198	
Marine Hospital No. 15, Pittsburgh, Pa				1	8	1						3	16	14	29	43	

Marine Hospital No. 16, Portland, Me			1		7	1						2	18	14	29	43	
Marine Hospital No. 17, Port Townsend, Wash					10		1					2	27	5	40	45	
Marine Hospital No. 18, St. Louis, Mo					7			1				4	24	20	36	56	
Marine Hospital No. 19, San Francisco, Calif				2	34	3	1	1	1			8	97	29	147	176	
Marine Hospital No. 20, Savannah, Ga			1	1	11	1	1					4	35	14	54	68	
Marine Hospital No. 21, Stapleton, N. Y					28	4	3	1	1			10	127	24	174	198	
Marine Hospital No. 22, Vineyard Haven, Mass					2							1	7	4	10	14	
Marine Hospital No. 43, Ellis Island, N. Y			2		39	1	4	1	1			8	168	17	224	241	
Marine Hospital No. 66, Carville, La			2	1	1							6	200	9	270	279	
Marine Hospital No. 70, Hudson Street, N. Y				1	5	5		1	1			11	39	35	63	98	
Marine Hospital No. 82, Norfolk, Va				1	22	2	2	1	1			8	80	18	117	135	
Total hospitals														409	1,944		2,353
Relief stations:																	
Second class			1		3	1		1	1			14	10	60	31	91	
Third class												9		106	9	115	
Miscellaneous														2		2	
Total relief stations														168	40		208
Foreign quarantine division:																	
Baltimore, Md											1		15	3	16	19	
Boston, Mass					2					3	2	1	19	7	27	34	
Ellis Island, N. Y. (immigration)												3	11	22	14	36	
El Paso, Tex												1	11	2	12	14	
Galveston, Tex										2	2	1	14	2	19	21	
Fort Monroe, Va			1							2	2	1	20	2	26	28	
Laredo, Tex													13	2	13	15	
Marcus Hook, Pa			1		2					2	2	2	12	3	21	24	
New Orleans, La										3	1	1	21	7	26	33	
Rosebank, N. Y					1					4	4	9	115	15	133	148	
San Francisco, Calif. (immigration and quarantine)					1					4	2	3	43	6	53	59	
San Juan, P. R											1	1	23	3	25	28	
Foreign ports												5	34	101	39	140	
All others				1	3					15	18	11	159	99	207	306	
Total														274	631		905
Domestic quarantine division:																	
Flood-control measures													1	12	1	13	
San Francisco, Calif													24		24	24	
Interstate												2	33	6	35	41	
Trachoma					10							1	12	5	23	28	
Rural sanitation					4							1	104	8	109	117	
All others										1	1	1	2	10	5	15	
Total														41	197		238

Personnel of the Public Health Service—Continued

	General and technical													Totals			
	Assistant collaborating epidemiologist and collaborating epidemiologist	Scientific—hygienic laboratory	Administrative assistant	Druggist	Nurse	Aid	Dietitian	Laboratorian in Roentgenology	Laboratorian in bacteriology	Pilot	Marine engineer	Clerk	All other employees	Medical and scientific	General and technical	Sub	Grand
FIELD—continued																	
Scientific research division																	
Hygienic Laboratory		26										10	60	16	96	112	
Leprosy investigation												1	5	5	6	11	
Malaria												2	24	4	26	30	
Nutrition studies												2	6	3	8	11	
Stream polution												3	19	14	22	36	
Sewage disposal														4		4	
Industrial hygiene and sanitation												11	8	28	19	47	
Child hygiene					1	1						6	3	9	11	20	
Morbidity statistics					1							9	4	3	14	17	
All others												8	24	14	32	46	
Total														100	234		334
Sanitary reports and statistics division	4, 418														4, 418		4, 418
Venereal diseases division													11	59	11		70
Miscellaneous			1										3	3	4		7
Total	4, 418	26	16	11	342	35	21	14	12	36	36	414	2, 305	1, 131	7, 686		8, 817

THE CHIEF CLERK'S OFFICE

FORCE ON DUTY IN THE BUREAU

During the fiscal year 1927 the number of departmental employees on duty in the bureau was reduced from 226 to 223, and the annual expenditure for salaries decreased $3,920, as compared with the preceding year. The force mentioned included 30 employees detailed for duty to the Bureau of Supply. At the last session of Congress, legislation was enacted whereby the personnel detailed to the Bureau of Supply are to be paid hereafter from a new appropriation given to that unit, the name of which has been changed to Division of Supply. Accordingly, beginning July 1, 1927, the 30 employees above mentioned were dropped from the rolls of the Public Health Service, thus further reducing the number on duty in this bureau on that date to 193.

During the fiscal year there were 36 resignations and separations, representing a turnover of 16 per cent. It is interesting to note that, although 133 promotions were made, the average salary remained almost stationary, increasing only from $1,679 to $1,684. During several years preceding, the average salary of bureau employees had steadily decreased.

PUBLIC HEALTH SERVICE LIBRARY

The library now has a total of 11,385 volumes and 5,725 pamphlets, representing a net increase during the last year of 496 bound volumes and 375 pamphlets. Obsolete books and works of reference are not carried beyond their period of usefulness and are not included in the foregoing totals. Most of the accessions are procured by means of gift and exchange, as the appropriation for book purchases is very small. Efforts are made to secure copies of all annual reports and health literature of permanent value published by States, municipalities, and other institutions and organizations in the United States and other countries. In this way it is expected gradually to build a reference library of great value in health and sanitary work.

The library received regularly 205 medical and scientific journals, of which 33 were paid subscriptions. Approximately 130 monthly and weekly bulletins from State, city, and foreign health departments, were also received.

In addition to the circulation of books, in response to requests from officers and others, the small library force continued to furnish valuable service to the medical and scientific workers by means of extensive research and reference work.

PRINTING AND BINDING

Expenditures for printing and binding for the Public Health Service amounted to $107,688.29. Of this, $93,341.74 was spent for printing publications, $7,231.31 for blank forms and records, and $4,395.85 for binding books for library and reference use, both in Washington and at hospitals in the field. The number of copies of publications printed was 1,280,650.

Improvements and Economies

Expenditures for supplies and services decreased from $10,700.55 in the fiscal year 1926 to $9,015.88 in 1927. Further progress has been made in improving and consolidating the bureau files and archives and in disposing of useless records. In the future the records of discontinued field stations and activities will be forwarded to the bureau for permanent preservation in a systematic file.

Buildings and Office Quarters

The bureau continues to occupy office space in several buildings and also conducts the Hygienic Laboratory in a permanent plant at Twenty-fifth and E Streets NW. It is desired to renew the recommendation made last year that a permanent modern building be provided adjacent to the Hygienic Laboratory, so that all service activities may be concentrated at a single point, and efficiency and economy thus promoted.

NURSING, DIETETIC, AND RECONSTRUCTION SECTION

During the past fiscal year the work of this section has been carried on with the following personnel: 330 nurses, 17 aids, 13 reconstruction assistants, 21 dietitians, and 3 social workers.

Of these, 310 nurses, all aids, dietitians, and social workers are assigned to the hospital division; 6 nurses to foreign quarantine stations; 2 nurses to scientific research; and 10 nurses to domestic quarantine in trachoma investigation work.

The turnover of the personnel of this section has been very considerable, including 160 resignations, 5 releases, 2 deaths, 123 new appointments, and 42 reinstatements. In the appointment of nurses. aids, dietitians, and others careful consideration is given to the question of economy in connection with transportation to the place of duty. During the year, 98 appointments were made at the place of employment, and the travel expense was paid by 70 appointees. In connection with recruiting for this service, 328 requests for information regarding employment have been received. Two hundred and seventy-four nurses were certified to the Public Health Service by the Civil Service Commission, of which number 110 were recruited by the nursing section of the Public Health Service.

It seems impossible to secure properly qualified male assistants in physiotherapy, and chief aids are now training their own assistants.

The excessive turnover in this class of personnel is believed to be due to—

(1) Lack of legislative status.

(2) Condition of quarters.

(3) No promotion in pay for length of service.

(4) Too long tours of duty in isolated stations.

(5) Requirement that nurses defray own expenses on change of station under certain conditions.

In discussing these various phases of the question, it should be stated that it appears desirable to secure legislation placing the nursing section of the Public Health Service on the same basis as the Army and Navy. The educational requirements are the same; all care for beneficiaries of the Government. Such action would eliminate competition between the various branches of the Government.

At many service stations nurses are housed in quarters much less desirable than is found in good civilian hospitals. Desirable quarters for nurses are found at only a few of the service stations.

Lack of promotion in pay for length of service at present constitutes one of the most common reasons for leaving the service.

Long tours of duty result from restricted appropriations for travel, as it is necessary to require the nurse in many cases to defray her transportation expenses if she desires a change of station.

The monthly report on the efficiency of nurses has been discontinued, and a semiannual report, similar to that now used for medical officers, has been substituted, thus eliminating one form.

Cooperative activities.—The superintendent of nurses is a member of two Federal specification boards; one on "beds and bunks" and one on "curled hair for mattresses," both of which have held a number of meetings during the year.

The superintendent of nurses is also a member of the advisory committee of nurses for the Veterans' Bureau, being secretary of this committee, which renders valuable service not only to the Veterans' Bureau but to the advancement of nursing standards in other Government departments.

The nursing unit has assisted the medical director of the Indian Bureau in securing personnel and in formulating policies for the nursing service. Six nurses from Public Health Service hospitals have been released for duty in the Indian Bureau and a number of other nurses recruited.

At the request of the Secretary of the Interior an investigation of the nursing service at Freedmen's Hospital was made with representatives of the Army and Navy nursing corps. The recommendations made by this committee were adopted.

Sixteen lectures to student nurses of the Army School of Nursing were given during the year.

The assistant superintendent of nurses has cooperated in a study of the District of Columbia health department's nursing activities.

The superintendent of nurses prepared two papers on dietetics, two lectures on venereal disease control, and lectures to senior students of nursing schools, and has also given several addresses on Government nursing services at various State nurses' meetings.

Papers on nursing and related subjects have been published in The World's Health, Pan American Bulletin, Navy Bulletin, International Nursing Magazine, American Journal of Nursing, and other magazines.

The supervision of the emergency room has been carried on as usual by the nursing section. The number of cases has averaged eight daily for the working days. Follow up for ill employees has been carried on, and the monthly report made to the industrial hygiene section on numbers of absentees and character of illness. Follow-up home visits have been made to those employees who seemed to require such service. With the limited office force on duty, it was not possible to do a great amount of home visiting. Vaccination and typhoid inoculations were given to a number of employees.

One thousand five hundred and thirty-seven visits to the emergency room, C Building, were made during the year. Of this number 258 were employees of other Government bureaus in C and F Buildings, or cases brought in from the street. These cases included slight injuries, accidents, or sudden illness, leaving 1,279 members of the Public Health Service who were cared for in the emergency rest room.

Approximately 210 visits were made to the relief room in the Butler Building. The smaller number of employees would account for the fewer visits to the relief room.

APPENDIX

FINANCIAL STATEMENT

The following is a statement of expenditures from appropriations for the Public Health Service for the fiscal year 1927:

Appropriation	Appropriated	Obligations			Unobligated balance
		Incurred	Liquidated	Outstanding	
Public Health Service proper:					
Salaries, office of Surgeon General, Public Health Service	$101, 000. 00	$98, 982. 30	$98, 982. 30		$2, 017. 70
Pay, etc., commissioned officers and pharmacists, Public Health Service	1, 175, 000. 00	1, 171, 648. 83	1, 171, 648. 83		3, 351. 17
Pay of acting assistant surgeons, Public Health Service	300, 000. 00	292, 065. 67	291, 976. 50	$89. 17	7, 934. 33
Pay of other employees, Public Health Service	1, 000, 000. 00	977, 113. 74	976, 880. 41	233. 33	22, 886. 26
Freight, transportation, etc., Public Health Service	25, 000. 00	24, 696. 30	18, 944. 46	5, 751. 84	303. 70
Maintenance, Hygienic Laboratory, Public Health Service	43, 000. 00	42, 495. 86	40, 885. 39	1, 610. 47	504. 14
Preparation and transportation of remains of officers, Public Health Service	1, 500. 00	348. 00	348. 00		1, 152. 00
Books, Public Health Service	500. 00	498. 96	496. 74	2. 22	1. 04
Pay of personnel and maintenance of hospitals, Public Health Service	[1] 5, 517, 966. 31	5, 476, 377. 94	5, 408, 510. 70	67, 867. 24	41, 588. 37
Quarantine service	460, 000. 00	455, 846. 16	428, 474. 15	27, 372. 01	4, 153. 84
Preventing the spread of epidemic diseases	430, 000. 00	229, 126. 79	220, 061. 87	9, 064. 92	200, 873. 21
Field investigations of public health	280, 000. 00	273, 825. 20	267, 395. 85	6, 429. 35	6, 174. 80
Interstate quarantine service	69, 000. 00	64, 859. 61	62, 846. 92	2, 012. 69	4, 140. 39
Studies of rural sanitation, Public Health Service	75, 000. 00	70, 562. 18	70, 123. 57	438. 61	4, 437. 82
Control of biologic products, Public Health Service	45, 000. 00	44, 468. 99	44, 300. 81	168. 18	531. 01
Expenses, Division of Venereal Diseases, Public Health Service	75, 000. 00	74, 749. 37	73, 201. 32	1, 548. 05	250. 63
Survey of salt marsh areas, South Atlantic and Gulf States	25, 000. 00	18, 474. 04	18, 173. 34	300. 70	6, 525. 96
Marine hospitals—					
Baltimore, Md	[2] 387. 12				387. 12
Savannah, Ga	[2] 377. 14				377. 14
New Orleans, La	[2] 3. 17				3. 17
Quarantine station, Boston, Mass	[2] 3, 835. 72				3, 835. 72
Total Public Health Service proper	9, 627, 569. 46	9, 316, 139. 94	9, 193, 251. 16	122, 888. 78	311, 429. 52

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[1] Includes $262,895.40 reimbursement for care and treatment of U. S. Veterans' Bureau patients and $5,070.91 miscellaneous.

[2] Balance available July 1, 1926.

Statement showing detailed expenditures, as required by act approved March 6, 1920:

Preventing the spread of epidemic diseases

Purpose	Allotted	Obligations			Unobligated balance
		Incurred	Liquidated	Outstanding	
Expenses at foreign quarantine stations and certain ones in the United States engaged in epidemic work	$89,000.00	$85,200.14	$84,228.20	$971.94	$3,799.86
Vaccine and vaccine points at United States marine hospitals and relief stations	532.05	502.00	395.53	106.47	30.05
Rocky Mountain spotted-fever control, including maintenance of laboratory at Hamilton, Mont	27,582.00	26,636.52	26,240.41	396.11	945.48
Trachoma prevention	62,450.00	61,311.37	59,005.42	2,305.95	1,138.63
Postage for mailing epidemic reports to foreign countries	1,070.84	1,047.92	1,047.92		22.92
Payment of personnel and other expenses in connection with plague prevention and miscellaneous epidemic work	55,234.19	51,382.05	46,198.81	5,183.24	3,852.14
Expenses of investigations of typhus fever in coastal cities	3,330.00	3,046.79	2,945.58	101.21	283.21
Unallotted balance	190,800.92				190,800.92
Total	430,000.00	229,126.79	220,061.87	9,064.92	200,873.21

Analysis of expenditures in accordance with General Accounting Office Bulletin No. 1, May 11, 1922:

Preventing the spread of epidemic diseases

[Actual payments]

	Classification	Payments
01	Personal services	$160,568.07
	SUPPLIES AND MATERIALS	
0200	Stationery and office supplies	2,473.61
0210	Medical and hospital supplies	5,103.09
0220	Scientific and educational supplies	5,638.63
0230	Fuel	1,792.02
0240	Wearing apparel and sewing supplies	52.54
0250	Forage and supplies for animals	1,508.01
0260	Provisions	10,532.81
0280	Sundry supplies	1,401.28
0290	Materials	365.25
02	Total supplies and materials	28,867.24
	SUBSISTENCE AND SUPPORT OF PERSONS	
0310	Furnishing of lodging	45.82
0330	Furnishing of food, lodging, and miscellaneous services	30.04
03	Total subsistence and support of persons	75.86
05	Communication service	1,382.35
06	Travel expenses	13,352.40
07	Transportation of things	1,341.28
10	Heat, light, power, and water	1,180.03
11	Rents	6,815.39
12	Repairs and alterations	222.15
13	Miscellaneous current expenses	2,623.94
	EQUIPMENT	
3000	Automotive equipment	469.64
3010	Furniture and fixtures	1,781.21
3020	Educational and scientific equipment	574.19
3050	Other equipment	808.12
30	Total equipment	3,633.16
	Total	220,061.87

Quarantine Service—Expenditures by stations

[Exclusive of expenditures from the appropriation "Preventing the spread of epidemic diseases"]

Name of station	Pay of officers and employees	Maintenance	Total
CONTINENTAL QUARANTINE STATIONS			
Baltimore, Md	$31,432.96	$47,790.05	$79,223.01
Beaufort, S. C	600.00	215.95	815.95
Biscayne Bay (Miami), Fla	3,425.00	939.59	4,364.59
Boca Grande, Fla	1,885.00	1,224.25	3,109.25
Boston, Mass	48,881.02	28,372.75	77,253.77
Brownsville, Tex	7,515.00	722.78	8,237.78
Brunswick, Ga	4,298.28	2,346.39	6,644.67
Cape Fear (Southport), N. C	8,753.33	3,405.11	12,158.44
Charleston, S. C	16,442.00	2,923.03	19,365.03
Columbia River (Astoria), Oreg	16,096.92	4,992.68	21,089.60
Coos Bay (North Bend), Oreg	580.00		580.00
Corpus Christi, Tex	105.00	236.80	341.80
Cumberland Sound (Fernandina), Fla	815.00	28.20	843.20
Delaware Bay and River (Philadelphia), Pa	5,714.67	14,716.80	20,431.47
Delaware Breakwater (Lewes), Del	2,521.50	532.38	3,053.88
Del Rio, Tex	5,180.00	1,616.85	6,796.85
Eagle Pass, Tex	17,420.96	1,394.80	18,815.76
El Paso, Tex	28,615.57	3,742.60	32,358.17
Eureka, Calif	31.50	88.55	120.05
Fort Monroe (Norfolk), Va	45,197.10	30,511.84	75,708.94
Freeport, Tex	825.09	330.00	1,155.09
Galveston, Tex	31,968.36	17,001.70	48,970.06
Georgetown, S. C	55.00		55.00
Gulfport, Miss	3,611.93	996.77	4,608.70
Hidalgo, Tex	4,339.13	1,304.56	5,643.69
Key West, Fla	5,570.54	549.36	6,119.90
Lake Sabine district, Tex. (Beaumont, Port Arthur, Sabine, and Orange)	26,389.48	5,441.74	31,831.22
Laredo, Tex	20,171.36	4,106.41	24,277.77
Marcus Hook, Pa	37,968.43	12,422.27	50,390.70
Mobile, Ala	24,398.81	9,020.22	33,419.03
New Orleans, La	62,450.11	10,445.50	72,895.61
Newport, R. I		5.00	5.00
New York, N. Y	220,771.76	105,275.36	326,047.12
Pensacola, Fla	14,363.50	4,704.38	19,067.88
Perth Amboy, N. J	770.00	1,260.00	2,030.00
Port Angeles, Wash		34.00	34.00
Portland, Me	13,635.86	4,737.92	18,373.78
Port Townsend, Wash	22,179.15	2,646.90	24,826.05
Presidio, Tex	2,100.00	512.43	2,612.43
Providence, R. I	1,597.34	400.00	1,997.34
Reedy Island (Port Penn), Del	5,760.00	488.84	6,248.84
Rio Grande, Tex	5,356.00	97.55	5,453.55
Roma, Tex		720.00	720.00
St. Andrews (Panama City), Fla	1,200.00	276.58	1,476.58
St. Georges Sound (Carabelle), Fla	300.00		300.00
St. Johns River (Mayport), Fla	5,425.00	1,348.01	6,773.01
St. Josephs (Port St. Joe), Fla	90.00	130.00	220.00
San Diego, Calif	12,487.00	4,057.06	16,544.06
San Francisco, Calif	70,626.19	36,572.08	107,198.27
San Luis Obispo (Port San Luis), Calif	125.00		125.00
San Pedro (Los Angeles), Calif	20,898.75	8,125.82	29,024.57
Savannah, Ga	14,158.40	4,873.12	19,031.52
Seattle, Wash	10,342.00	9,420.31	19,762.31
Tampa Bay, Fla	12,228.04	7,303.74	19,531.78
Vineyard Haven, Mass		127.30	127.30
West Palm Beach, Fla	280.00		280.00
Freight and miscellaneous expenses		21,979.41	21,979.41
Total continental quarantine stations	897,953.04	422,515.74	1,320,468.78
INSULAR QUARANTINE STATIONS			
Hawaii	34,021.76	20,216.93	54,238.69
Porto Rico	38,659.05	10,643.86	49,302.91
Virgin Islands	16,338.95	1,621.93	17,960.88
Total insular quarantine stations	89,019.76	32,482.72	121,502.48
Leprosy investigation station, Honolulu, Hawaii	21,131.02	847.70	21,978.72
Total all stations	1,008,103.82	455,846.16	1,463,949.98

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